1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

The social development which these processes entailed represented no steady internal evolution, had been sought by no part of the population, and corresponded to no inventiveness of spirit. It had been imposed from without, partly by pressure of world discoveries such as steamship and telegraph, partly by the largely unintended impact of the West at many points, partly by Government action; and it had been accepted without discrimination. Ideas of doubtful value, glib catchwords from European politics, social observances strange to the East, had been welcomed because new, with little knowledge of their significance. There was no care for the true bases of European thought or virtue.

Meanwhile it was all too obvious that 'Iraq society, whatever the merits, the humanity or social gifts of its members, was afflicted by serious evils. The level of enlightenment was low by any standards, gross superstition was rife, women were treated as inferior beings. Security was uncertain even in the towns, thanks to unpunished crime and the survival of a bullying fanaticism directed, in bad times, at the minorities. Malnutrition was the lot of four-fifths of the population. The infant death rate was among the highest in the world. Many diseases were endemic because untreated, and combined to produce a race physically mediocre or inferior; such were malaria, sand-fly fever, bilharzia, hookworm, dysentery, typhoid, smallpox, the venereal diseases, and epidemic cholera. And dominating all lay the pervasive curse of poverty, removable only by fundamental changes in the whole territory's economy. A new spirit, new use of resources, almost a new race of men would be needed before this evil could be cured by a realization of the country's vast possibilities and by a new social attitude. 'Iraq in 1900 was a society of blighting shabbiness, low standards, and all the vices of the hungry and unsatisfied.

In appearance and amenities the 'Iraqi towns had by 1900 changed little for centuries. The same locally varying building materials, the same design of house, mosque, and bazaar, the same traditional ornamentation united the planless and crowded settlements of the nineteenth with those of the sixteenth century. Streets nowhere permitted the passage of wheeled traffic; huddled narrow lanes provided bare space for donkeys or porters to carry their loads. Only a few new buildings, and these of ancient pattern, varied the limits of the older towns or formed the new Baṣra suburb of 'Ashar or the 'Amara river front. Baghdad remained within its line of rubble heaps which had been walls, Mosul had spread the beginnings of a new quarter outside its narrower ring; the walls of Baṣra were in ruins, those of Kirkuk or Arbil barely remembered. The bazaars and warehouses, commercial heart of the townships, were guarded by watchmen-contractors whose

1: Longrigg G-4, 5 (ca. 1915-1940) MH1 Iraq MH1

the American School of Oriental Research founded in 1923 and the British School founded in 1929 maintained headquarters in Baghdad, and both published the results of their researches.

In the field of Public Health the Government services had achieved much, but not the impossible. They had faced an immense field to cover and to conquer, had started from nothing, and had been always restricted by lack of funds and trained officials; and meanwhile, inevitably, the disease- or weakness-producing factors in the territory, and the apathy and conservatism of its people, continued. The problem of general malnutrition and resulting lack of physical vigour was, in fact, the problem of poverty: the cure, still distant, lay as much or more in increased wealth as in increased enlightenment; and the same was true, in spite of active and multiplying maternity and child-welfare clinics, of an infant death-rate still tragically high. Little, save increasingly comprehensive and practical study, had yet been done to combat the curse of hookworm, malaria, or bilharzia; a comprehensive effort against these diseases and against tuberculosis, eye-disease, and the typhoid group must call insistently for more time, more funds, and more specialized staff. Steps taken against epidemic disease had been successful; plague and cholera had scarcely appeared for a quarter-century, and smallpox was well handled with full modern resources. Urban sanitation had been improved, sewage schemes adopted, and sanitary inspector training developed; but conditions in this respect over most of the territory remained wholly primitive, and the majority of 'Iraqi doctors were little interested in public health administration. The country at large was served by some eighty hospitals, of which three-quarters were general and a quarter specialized for fevers, mental and venereal diseases, leprosy (at 'Amara), children's and chest and eye diseases; a quarter of the whole were in Baghdad. Non-governmental hospitals were those of the oil companies, foreign missions, and the minority communities. The Jewish Mir Elias Hospital was still open, for patients of all creeds; all other Jewish hospitals and dispensaries had been closed. The Railways, the Port, the Police, and the Army maintained their separate Medical services. The supply of doctors, thanks to the Royal Medical College, had much improved since the thirties, but some reliance on foreigners was still necessary; some thirty of these were so employed in 1951 and recruitment of more was in progress. Registered practitioners in all numbered some 300 in 1945, 420 in 1949. The reluctance of 'Iraqi doctors to serve in the remoter regions—or, indeed, elsewhere than in Baghdad—was still an embarrassment. Nevertheless, the busy and valued hospitals and dispensaries maintained in all parts of 'Iraq were playing a major stabilizing as well as a

3: Clark S-5 (1950)1951 MH1 Iraq MH1

CHAPTER ONE

THE BACKGROUND

THE COUNTRY AND THE PEOPLE

An appreciation of the present state of education in Iraq and the possibility of advance towards the goal of compulsory education is not possible without some reference to the history and present circumstances of the country.

Following centuries during which a brilliant civilization flourished, particularly during the Abbasid period, the country remained under Ottoman domination from the middle of the sixteenth century until the first world war. British interest in the port of Basra and the development of the oilfields caused the people to fear a continuance of alien domination but, after an uneasy mandate, the country now known as Iraq emerged in 1932 as an independent nation with membership of the League of Nations. The long period of Ottoman domination with an administration centred in a distant capital left its mark. Administrative reforms and some social advance were attempted during the period of the mandate. When, however, Iraq became an independent State its Government was faced with a legacy of ignorance, poverty and disease among all but a very small minority of the population. Attempts have been made by successive Governments to liquidate the effects of this legacy and, in certain directions, rapid and significant progress has been made. But economic, social and political problems of great magnitude remain, all of which have their effect on educational progress or retardation.

Under its constitution the country enjoys a democratic form of government with a limited monarchy and a cabinet responsible to parliament. Despite the rapid educational advance of recent years, the majority of the people are illiterate, and effective participation in the government of the country must inevitably be confined to a few.

Iraq covers some 175,000 square miles, mainly of alluvial plain stretching from the Persian Gulf through the central uplands to the mountains of Turkish Kurdistan and from the Arabian and Syrian deserts to Persia. Apart from the four principal towns of Baghdad, Basra, Mosul and Kirkuk, together with a number of

3: Clark S-5 (1950)1951 MH1 Iraq MH1

SOCIAL FACTORS

Alongside these economic and administrative problems are a number of social factors which inhibit educational development.

Illiteracy and Health Problems. For many years it is likely that illiteracy among the adult population, and the state of the public health, will constitute obstacles to the extension of primary education, especially in the rural areas. The reasons for this are obvious. Parents who are themselves illiterate and living at a low standard of life are not easily persuaded that schooling is a worthwhile substitute for the work of their children. Neither are they able to provide in their homes those standards and values which, if the training of the schoolroom is not be negatived, are such necessary reinforcements to public education. Similarly, the prevalence of epidemic and endemic disease, together with inadequate sanitation, also contributes to a major health problem which must be taken into account in attempting to ensure regular school attendance.

Yet while obstacles of this kind exist, they are diminishing. The Public Health Service is developing slowly but surely, and one has only to see a doctor at work in a remote rural area to appreciate the devoted service which is beginning to contribute to a solution of some of the health problems. Again, although illiteracy and poverty are not the best friends of education, one has only to visit remote little village schools to realize that some of the poorest parents are making sacrifices to send their children to school.

Before compulsory education can be achieved, however, even assuming that the money for it will be forthcoming, a vigorous attack on adult illiteracy will be essential. To this end, what is needed in the rural areas is a type of school which, in addition to meeting the needs of the children, provides in a practical and non-academic fashion realistic fundamental education for the parents. The teacher training institutions would make a most valuable contribution if, quite apart from training the future teachers to attend to the needs of children, they also initiated them into the more practical techniques of teaching illiterates the fundamentals of better living.

The Position of Women and Children. Another obstacle to educational and social development which is often quoted is the position of women in a society which is predominantly Muslim. Traditionally women are discouraged from taking part in public life, and this attitude is bound to be reflected in education.

658 238 students, to fifteen with 1863 students. Nor has the increase
871 in schools been attended by a decrease in the quantity or
[875] quality of the teachers, although they are admittedly still inadequate in numbers and in training. The return of 'Iraqi students sent abroad at the expense of the Government in lieu of setting up its own Higher Educational Institutions has brought fresh blood, progressive ideas and new standards to Education to an extent not equalled by any other Ministry. Careful efforts have also been made, particularly in recent years, to adapt Western methods to 'Iraq instead of blindly adopting them. In this respect, the educational system in vogue in present-day Turkey has been looked to as furnishing a model.

871 Notwithstanding these praiseworthy achievements, concern has been expressed both by 'Iraqis and by others lest various tendencies, now observable in the educational system, mar the work of the Ministry. Such trends seem to be: the extension of the number of schools without maintaining their grade or the standard of work required by them; the failure of the Ministry to dissociate itself entirely from political struggles and controversies; and the acquisition by students of the view that education is vocational rather than cultural in aim and that government positions should be the reward of their school certificates. On the ability of the educational system to free itself from these handicaps, either by the wise direction of educational affairs on the part of those in authority or by the growth of a new attitude on the part of the people themselves, will depend much of the continued progress of 'Iraq.

744 In other fields, a health service has been in existence since
759 the British Occupation, a Medical School has been created at Baghdad, plague and cholera checked and sanitary regulations for the corpse traffic to the Holy Cities imposed. On the other hand, the Medical School has been unable to provide sufficient highly trained graduates with a willingness to take posts in out-
[758] lying districts. Medical centres are unable to reach but a small
164 portion of the total population. Malaria, tuberculosis and eye dis-

6:Ireland S-5 (no date)1937 MHI Iraq MHI

cases are still rampant and infant mortality is distressingly high.

In agriculture the wave of optimism of the early 1920's has ebbed away. The Agricultural School at Rustam has been curtailed in funds, in purpose and in function. Improved machinery and agricultural methods foreshadowed during the British Occupation have not been introduced generally and are still regarded with disfavour in many quarters. Cotton, once believed to be the crop in which 'Iraq would rival the Sudan and India has been rendered unprofitable by boll-weevil, by hot winds, by the reluctance of the *fallaḥīn* to cultivate a strange crop which does not provide a living for themselves as it grows, and by the drastic fall in world prices. Wheat and barley remain of low quality, the foreign market being practically lost. Improvement in packing and marketing dates, 'Iraq's principal crop, has been apparent but effective co-operation among the growers is still lacking. Cheering features, however, have been the negotiations whereby Japan may take 'Iraqī wool and the signature of an agreement between 'Iraq and Palestine, December 14th, 1936, granting 'Iraq a free zone at Haifa and numerous commercial concessions.[1] The favourable trade balance of £217,000 for 1934-35, recently announced by the Ministry of Finance, is also encouraging.[2]

Large-scale industries are, for the present, practically non-existent although a number of projects, such as cement making, have been under consideration for some time. The Department of Labour Affairs, necessitated by 'Iraq's entrance into the League of Nations has had few important matters to come into its hands, although a law protecting 'Iraqī labour against foreign competition has been recently passed.[3]

These brief summaries of tendencies apparent in the political, economic and social life of 'Iraq seem to indicate, on the basis of absolute standards, the development of 'Iraq along unsatisfactory lines. It is only fair, however, in judging a government

[1] *G.B. and E.*, March 11th, 1937. [2] *Al-'Iraq*, September 7th, 1936.
[3] *G.B. and E.*, December 26th, 1935.

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

procurement of equipment and the erection of structures to house this equipment. In the past these functions have been carried out by two different sections of the Ministry of Communications and Public Works with little or no coordination.

V. Public Health

Considerable progress in public health has undoubtedly been made over recent decades. The number of hospitals, dispensaries and doctors has greatly increased, and there have been no epidemics of pestilential diseases in recent years. Yet infant mortality is still extremely high—perhaps as much as 250 per 1,000 births; and there is still a very high incidence of such endemic diseases as trachoma, hookworm, bilharzia, malaria and the dysenteries. Many of the prevailing diseases are the by-product of polluted water, and unsanitary, congested living conditions which in turn are traceable largely to poverty and ignorance. Thus an increase in production and standards of living brought about through the general development program will be an important complement to a direct attack upon the health problem through expansion and more effective organization of governmental health services.

The main attack will have to focus on those diseases which sap the vitality and undermine the productivity of the people. In some rural areas, for example, virtually the entire population is at certain times stricken with malaria. Malaria is said to cause 50,000 deaths every year, as well as much sickness and disability which results in great loss for the country. In the provinces of Amara, Muntafiq and Kut the incidence of bilharzia or schistosomiasis, another debilitating disease, is particularly high. The dysenteries and other intestinal ailments are also a prominent cause of low vitality. In 1948 no less than 5,656,474 visits to medical institutions for treatment were reported, and 1,291,225 cases of infectious diseases were treated. Of these, 603,698 were malaria, and 524,740 trachoma. These statistics are of twofold significance. On the one hand, they illustrate the great expansion which has taken place in facilities for treatment of disease. On the other hand, they indicate clearly the relative inadequacy of efforts to prevent disease. It is

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

164 therefore vitally important that more attention be devoted in the future to the preventive aspects of public health work.

Prevention of Disease

744 751 Many measures could be taken to strengthen the preventive aspect of public health work. Doctors and nurses must, above all, be imbued with its importance, for they have countless opportunities to impress on their patients the need for proper hygiene and sanitation. Thus social medicine, involving the study of the environmental factors bearing on health and of appropriate measures for the prevention of disease, should be taught as part of the qualifying course in the medical school at Baghdad. Far more emphasis also needs to be placed on the teaching of hygiene in elementary and secondary schools. Children should be taught not only good personal habits, but also the importance of sanitation in and around the home. Special classes might be given in the prevention of the main endemic diseases, by the school medical officer whenever possible. Health education must likewise be given an important place in the curriculum of teachers' training colleges and special courses in the prevention of diseases associated with irrigation and cultivation should be provided in the School of Agriculture and the School of Engineering. Hospitals should be an object lesson in hygiene and every effort made to impress on patients the importance of personal and domestic hygiene. The interest of adults in public health can be stimulated by visual education and by organizing "health weeks", the first of which was held in Diwaniya with conspicuous success during the Mission's stay. The army and police have an excellent opportunity to teach habits conducive to good health. Prospective farmers for new settlement projects should be medically examined to restrict, as far as possible, the introduction of endemic diseases into these settlements. To prevent water pollution it would be desirable to locate villages in such settlements away from irrigation canals wherever possible.

743 759 The Mission strongly recommends that the number of village dispensaries, which is now over 400, be gradually increased and that they be equipped to serve as public health centers. Such centers would be simple in function, aimed primarily at providing elementary medical and health assistance to as many people as possi-

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ble. As conditions permit, the scope of their services could be expanded. At the present stage it will usually be sufficient to have a specially trained medical assistant rather than a doctor in charge. At present there is no separate cadre of medical assistants. It is therefore suggested that the existing School for Health Officials be converted into a training school for such assistants or aides. The medical assistant in charge of a dispensary will need to consider himself as the village sanitation officer and enlist the help of the village elder in organizing a cooperative effort to keep the village clean. He will also need the assistance of a village midwife and, at a later stage, of a public health nurse. The traditional midwife, if properly trained, could have great influence in improving the standards of personal and domestic hygiene, in combatting infant mortality and giving simple advice on the care of infants. Such midwives, when drawn from the ranks of the people whom they will serve, will have a ready entry into homes and will be able to speak in terms which will be readily understood. It is therefore recommended that a school for training such midwives, recruited from the villages, be established. A similar school should be set up for town midwives. It would be desirable to have three foreign midwives appointed to direct this training program.

In the cities a considerable improvement in sanitation could be effected through the creation of a sanitary corps. Such a corps should be charged with house-to-house inspection to detect health nuisances and prevent fly and mosquito breeding, with the inspection of eating-houses, foodstuffs and food handlers, and with the improvement of environmental hygiene in general. A foreign public health or sanitary engineer would be required to organize this service and establish the facilities and courses for training appropriate numbers of sanitary overseers and sanitary inspectors who, in turn, would impart the necessary instruction to the house-to-house inspectors.

The prevention of hookworm, malaria and bilharzia warrants special attention. These diseases are widely prevalent and through their general debilitating effects materially lower productivity. The incidence of hookworm would be reduced by improvements in sewage disposal, the closing of open drains, provision of suitable latrines and the wearing of shoes. Bilharzia, which is transmitted

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164 744 by a snail living in irrigation canals, can be combatted by elimination of stagnant, polluted water in which the snail thrives and by treating canals twice yearly with copper sulphate. DDT spraying and the elimination of stagnant water assist in the reduction of malaria. [312] In order to combat both malaria and bilharzia, major irrigation canals should be designed so as to maintain a rate of water flow no less than three miles per hour, and minor distributory canals so as to insure rapid drying-out after use. It is important that one complete "dry-out" per week be enforced in every section under irrigated cultivation.

Knowledge of such methods of combatting disease is already available in Iraq. What is needed is wider dissemination of the [742] knowledge and a vigorous campaign to give it effect. The Endemic Diseases Institute in Iraq has done much useful work in this field but it has been handicapped by insufficient transport, supplies and technical personnel. In the future there will be no justification for denying the Institute adequate funds for its work. It would be well to organize special campaigns in those provinces or districts where the incidence of a particular endemic disease has been especially high. Such a campaign would involve a simultaneous effort to treat the people already afflicted in the locality and to teach local officials and the local inhabitants in general the appropriate preventive measures. Mobile dispensaries and mobile vans equipped to show educational films would be especially useful for this purpose.

Curative Services

743 On the curative side, principal emphasis must first be placed on the improvement of existing hospitals and an expansion in the nursing service. In its five-year program the Development Board has allotted ID 3,800,000 for medical service buildings. The Mission believes that a large part of this sum should be used to modernize, extend or replace existing hospitals and improve their facilities for diagnosis and treatment rather than to construct additional hospitals. In the monograph on public health the Mission has listed the most urgent projects of this kind which it suggests should be undertaken in adition to those for which provision was made in the first annual budget of the Development Board. While the number

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

ANNEX F

PUBLIC HEALTH

I. Introduction

Extent of Progress Made in Public Health

In the past 30 years health services in Iraq have improved considerably. In 1918 the country had only one hospital, contrasted with the present 89 hospitals (4,812 in-patient beds or one bed per 1,000 people) and 448 dispensaries. Control measures including the use of vaccines, particularly for smallpox, have cut down the incidence of epidemics during the last few years. Cholera has not occurred since 1931 and the plague not since 1935. Smallpox and louse-borne typhus also seem to be under control. An Institute of Endemic Diseases has been set up with headquarters in Baghdad. Steps have already been taken to control malaria and a good deal of information is being assembled on schistosomiasis (bilharzia) and ankylostomiasis. Nevertheless, the main endemic diseases—malaria, schistosomiasis, trachoma, and ankylostomiasis —are still very common.

In 1949 there were 797 doctors practicing in Iraq, of whom 419 or 53 percent were in Baghdad. There were about 387 government pharmacies and 252 pharmacists working in private pharmacies in the larger towns.

The doctors are supplemented by 265 health officials, originally trained primarily to staff village dispensaries, and 400 nurses and 659 dressers (male hospital attendants), about one to every four or five hospital beds. There are also private nurses, midwives and dressers, and 130 public vaccinators who are employed on a permanent basis. In 1948 and 1949, 3,061,955 and 2,080,777 smallpox vaccinations were made (the 1947 census showing a total population of 4,799,500).

Malaria, trachoma and bronchitis were the main hospital cases; the dysenteries, anemias, wounds, syphilis and phthisis were

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

164 167 also frequent causes for hospitalization. In 1949 there were 5,876,336 visits to health institutions for treatment.

Public Health Budget

744 662 164 In 1951-52, ID 2,089,180 (7.6 percent of the total budget) were allocated to health services, as compared to ID 187,672 in 1931. Because of the prevalence of endemic diseases and the constant danger of epidemics, it would not be unreasonable to spend 10 percent of the total budget on health services.

759 Salaries for personnel in the medical service appear to be low in relation to the cost of living, although they are not low compared to other civil service salaries. The basic salaries, exclusive of cost-of-living allowances, range from ID 5.15 a month for a dresser, to ID 25 for a doctor and ID 80 for a director-general.

Current Health Conditions

165 In spite of the undeniable progress in health conditions, there is need for further improvement. Definitive data are lacking on total birth and death rates, but some figures are available on the infant mortality rate, which is probably the best index of the social circumstances of an area. For Baghdad, the recorded rate in 1949 was 128 deaths per thousand births. Iraqi doctors who have worked in different parts of the country consider the rate to be about 250 per thousand, on the average, compared with about 34 deaths per thousand live births in highly developed countries.

164 Among the people as a whole, malaria seems to be the chief killer, especially in country districts. In the main cities the leading causes of deaths were intestinal diseases, tuberculosis and respiratory diseases. These diseases and trachoma seriously affect the ability of men and women to work efficiently and are among the major causes of low productivity of labor in Iraq. For example, candidates for the police service are frequently rejected because of defective eyesight and what is characterized as "poor physique" associated with chronic malaria, schistosomiasis, etc. About 20 percent of the young men liable for military service are found to be unfit.

Heart trouble, cancer and other organic disturbances are far outnumbered by diseases which are essentially social in origin. Most of them can be traced to lack of hygiene, poor sanitation and

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congested living conditions combined with a coarse and monotonous diet.

In common with many other countries, there has been a drift to the towns, and unsanitary slums have formed on the outskirts of some cities. Steps should be taken to improve the living conditions of these slum dwellers. So far sewers and sewage disposal are generally lacking in the cities and towns. Baghdad has septic tanks and cesspools, but there are still some open drains; most of the larger towns have similar systems of sewage disposal but conditions in the smaller towns and villages are still very primitive. The disposal of household refuse and the cleaning of streets are generally well carried out in the bigger cities but not in most towns and villages.

Constant pilgrimage traffic creates another problem in public health. The holy shrines of the Shia sect of Moslems are in Iraq and a large number of Iraqis are members of this sect. There is a continuous stream of travelers through the country, including both Iraqis and foreigners, mostly Iranians, visiting the holy shrines, and Iraqi and foreign pilgrims on their way to Mecca. All this traffic exposes Iraq to the dangers of imported epidemic disease and stringent quarantine regulations have been enacted. But the land frontier with Iran is so long that it is quite certain many incoming pilgrims never are subjected to any control measures. This means that Iraq needs internal preventive services of the highest possible standard. Currently, all pilgrims leaving Iraq for Mecca are vaccinated against smallpox and inoculated against cholera.

The need for greater emphasis on preventive measures stands out clearly in even a brief analysis of the most debilitating diseases and their causes.

Intestinal Disorders

Ankylostomiasis (hookworm disease) in itself produces anemia. Many patients are so weak by the time they reach a hospital that they require lengthy treatment. It thrives in an unsanitary environment characterized by inadequate sewage disposal, open drains, and lack of proper latrines. Incomplete surveys indicate that it is most prevalent in the South.

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

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Ascaris, caused by round worms living in the intestinal tract, is found particularly in the North. Sewage disposal is the worst offender in this case; the custom of using the contents of cesspools as manure for vegetables is probably among the chief factors in spreading the disease.

In the case of the *dysenteries*, the incidence has been correlated with fly-breeding seasons, and is thus generally lower in winter and in August and September. Many Iraqi doctors maintain there are now fewer cases of dysentery in those cities in which pure water supply systems have been installed.

Unlike dysentery and typhoid fever, *enteritis*—common throughout the land and particularly among infants—is, in the opinion of Iraqi doctors, as common as it ever was in spite of some sanitary improvements in the cities.

Malaria

The desert climate prevailing over the greater part of the country is not in itself conducive to the breeding of mosquitoes. Man-made conditions, specifically irrigation projects, are largely responsible for the breeding of the disease-carrying mosquitoes, especially in the central plains where they thrive in seepage water, open pools and the small irrigation channels of the date palm gardens. There can be no doubt that every year malaria causes many deaths (estimated by Iraqi doctors at 50,000 a year), much sickness and permanent disability and, consequently, immense loss to the country. It must also be remembered that malaria is commonly associated with schistosomiasis (carried by the snail thriving in polluted water) and ankylostomiasis, causing widespread anemia and debility. Malaria is therefore of profound significance to the economy of Iraq.

Tuberculosis

Although the total population is not large, many parts of the country are, even in the villages, densely populated. In a poor district of Baghdad and in many villages an average of 4.5 persons live in one room. Iraqi doctors are generally of the opinion that tuberculosis is increasing in the country although there are no

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

reliable figures on its true incidence. One real problem is that the public has come to regard tuberculosis as a shameful disease so that few people report to hospitals in the early stage of the illness. The government has applied to the World Health Organization for assistance in dealing with tuberculosis. It is understood that WHO will send a team consisting of a consultant, an epidemiologist, a bacteriologist and two nurses to begin a BCG campaign; and that, by arrangement with UNICEF, they will be assisted by two medical officers, two nurses, and one administrator. The government will build a suitable "chest center" in Baghdad where the WHO team will work and where local staff can be trained.

Eye Diseases

Eye diseases are common in Iraq, as in the rest of the Middle East. It has been estimated that there are 40,000 totally blind persons, most of whom cannot work and must be cared for, thereby becoming a burden to the community. About one in five of the total population have been treated annually for conjunctivitis or trachoma in the past six years. To a large extent these also are social diseases, although some doctors in Iraq think certain eye diseases may have a nutritional basis in the consumption of large quantities of polished rice.

II. The Curative Services

Hospitals and Dispensaries

In general, the curative services have received more attention than preventive medicine. Iraq's 89 hospitals are unevenly distributed, however, since one third of them are in the Baghdad area and the remaining 59 are divided among the other 13 provinces. It is true, of course, that there is higher concentration of people in Baghdad.

Of the 89 hospitals, 58 are general and six are for infectious diseases, three for eye diseases, two for venereal diseases and one for lepers. There are also two hospitals for children, one for

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

IV. Endemic Disease Prevention

One of the most important sectors of the entire public health program should be a well-planned attack on the leading endemic diseases, e.g. schistosomiasis, malaria and ankylostomiasis.

The need for better housing, sewage disposal systems and safe water supplies has already been mentioned. Measures to accomplish these improvements are discussed in detail in Annex H, on *Community Planning and Facilities.*

Schistosomiasis

It is clear from available records that at present relatively few persons suffering from schistosomiasis receive treatment. The Schistosomiasis Section of the Endemic Diseases Institute has carried out a survey which shows that the disease does not occur south of Basra and that, north of Basra, after reaching a peak in the Lakes Area, its incidence declines steadily up to the Kurdish mountains, where the disease does not occur at all. In Basra province the incidence reaches 23 percent, in Amara province 67 percent and in Baghdad province 35 percent.

Apart from its debilitating effects, the disease is complicated in a number of cases by bladder stones and calcification of the bladder. Associated as it commonly is with attacks of malaria and infestation with hookworms, schistosomiasis is of profound economic significance since it lowers the individual's capacity for work and his ability to overcome intercurrent infections.

The intermediate host is a snail which lives in stagnant water. Irrigation therefore provides conditions which may cause an increase in the prevalence of the disease, as has been shown in Egypt where schistosomiasis is a major public health problem. Investigations made up to the present indicate that the only fresh water snail which carries the disease in Iraq is the *Bulinus truncatus.* It does not appear to occur in either the Euphrates or the Tigris, or in streams in which water flows at a rate of three or more miles an hour. The cold winter weather inhibits the snail's activity and it is able to multiply freely only during the months of June and July.

7: International Bank N, S-4 (1951) 1952 MH1 Iraq MH1

Spread of the disease[1] may be limited by:

1. Destruction of the snail through the use of copper sulphate (or other compounds) and the elimination of stagnant water. The rapid lowering of water levels will also destroy the snail by desiccation, and in irrigation canals a free flow of water makes conditions unsuitable for the snail.
2. Prevention of infection of the snail by the human host. This can be effected by treating the human carriers and by preventing the pollution of water.

In new irrigation projects it is strongly recommended that steps be taken:

1. To design major canals so that they maintain a flow of three miles an hour or more and minor distributory canals so that they dry out rapidly.
2. To site villages and canals, wherever possible, at a distance not less than a mile apart.
3. To provide villages with a separate, protected water supply so that water is not drawn by the inhabitants direct from canals. Where the underground water is unfit for use, water could be drawn from the closest canal by pipe and be passed through a simple filter. The filtered water (it could in some cases by chlorinated) could then be raised by "hydrohoist" or by semi-rotary pump into a gravity tank—if so required. Another important measure would be the installation of village baths.
4. To provide suitable village latrines, some of which should be on the side of the village towards the canal. Experiments should be made to test the feasibility of using pit or bore hole latrines. Public water supplies, baths, and latrines require, of course, attendants to keep them in order. Householders should install their own latrines.
5. To examine, as far as possible, the people who will live and work in the project. If necessary, they should be treated for schistosomiasis before irrigation begins.
6. To treat the canals and all collections of water that harbor the snail with copper sulphate twice a year.
7. To examine annually representative groups such as school children to determine whether the measures taken are effective.
8. To educate the people not to foul water and to promulgate regulations to provide for the protection of water from pollution.

[1] [SCHISTOSOMIASIS -- ANALYST.]

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Shitwi (winter) cultivation is, on account of the low temperature, far less likely to spread schistosomiasis than *saifi* (summer) cultivation. In considering any expansion of summer cultivation, therefore, the attendant health hazards should be carefully considered.

To carry out mass treatment of the people an expansion of the dispensary system is necessary together with the provision of mobile dispensaries. Initially four of these mobile dispensaries might be put into operation in the provinces having the highest incidence of schistosomiasis. The cost of each, including three motor vehicles, tents, 20 beds and supplies, would probably not exceed ID 5,000. In addition, an increase is required in the number of vehicles available to the Endemic Diseases Institute and provision must be made for an adequate and constant supply of copper salts.

Malaria

There can be no doubt that irrigation has been associated with a considerable increase in the malaria of the plains. Gravity or flow irrigation may lead to flooding of land or to seepage due to the faulty construction of canal banks. Water is precious where irrigation is carried out by lift and is not commonly wasted; consequently, flooding of land is rare. A third form of irrigation employed—namely that by natural inundation—is only seasonal.

Much work has been done in the Endemic Diseases Institute on studies of malaria in Iraq and also on the bionomics of the chief vectors of the disease. It has been discovered that in the North the mosquito *A. sacharovi* is associated with high endemicity. It breeds mostly in seepage water, open pools and in rice cultivation, and appears to be associated with sharp outbreaks of malaria when it descends occasionally into the plains.

In the South and spreading as far north as 34°N., *A. stephensi* breeds in similar conditions to those in which *A. sacharovi* develops in the North; it favors particularly water in small borrow pits, seepage water and the small irrigation channels of the date palm gardens. The *A. stephensi* mosquito is generally found in those areas where the level of the subsoil water is high. It is a highly efficient carrier of malaria and used to be found in the houses of Baghdad during the summer.

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Control measures include larvicidal treatment and the residual spraying of dwelling houses for the destruction of adult mosquitoes. In Basra, weeding of the small irrigation channels in the date gardens to promote the free flow of water is followed by the application of one percent DDT in oil and also by the spraying of the scattered huts at the fringe of the town. After the British Army left Iraq, there was a gradual but progressive relaxation of control measures which, coupled with the high river flood, culminated in a sharp outbreak in 1946. Spleen rates rose to 90 percent in some parts of the town but have since fallen rapidly with the reinstitution of control measures.

Measures designed to reduce the incidence of malaria include the following:

1. Expansion and extension of present control measures to insure:
   (a) An ample and constant supply of the various forms of DDT required.
   (b) An increase in the number of motor vehicles available to the Endemic Diseases Institute for its work.
   (c) An increase in special technical staff as rapidly as personnel can be trained.
2. Drainage in those areas where the level of the subsoil water is high in order to lower the level. Every proposed drainage scheme must, however, be carefully examined and judged on its merits. The drainage of established swamps is not likely to reduce the incidence of malaria; indeed, it may even increase it by providing suitable breeding places for dangerous mosquitos in drains. Amara province, for example, has extensive swamps but the mosquito breeding in them is predominantly the harmless *A. pulcherrimus* and the incidence of malaria is not high.
3. Expansion and extension of the village dispensary system, including mobile and movable dispensaries, to make treatment more freely available to the sick. The sale of antimalarial drugs in village shops would also help those living in hamlets remote from hospital and dispensary.
4. The approval of every new proposed irrigation scheme however large or small and whether government or private, by both the local and central medical authorities.
5. Comprehensive legislation, with effective means to enforce it, to insure the absence from irrigation schemes of conditions prejudicial to health.

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6. Well-trained sanitary staff in sufficient numbers to keep up a continuous inspection of irrigation schemes.
7. Recognition by officials of the Irrigation and Agriculture Departments of those conditions falling within the sphere of their own work that are prejudicial to health. They should also know how to remedy such conditions.
8. Cooperation of various departments. It is of primary importance that irrigation schemes be submitted for approval by the provincial administrative council, on which sits the chief medical officer.
9. The introduction of different crops or new methods of cultivation of existing crops which might have profound effects on the incidence of malaria. Possible examples are the substitution of potatoes for rice or the cultivation of "dry land" rice in the northern mountainous area.

It is understood that the government has sought advice from the World Health Organization on malaria control and that provision has been made under the technical assistance budget for one malariologist, one entomologist and one sanitation expert. The work is timed to begin in the second half of 1951 and to continue throughout 1952.

Ankylostomiasis

A good deal of work has been done in recent years to ascertain the prevalence and effects of hookworm disease. Improvements in sewage disposal, the closing of open drains, the provision of suitable latrines and the wearing of shoes are all measures that will assist in reducing the incidence of hookworm disease. Until such permanent improvements can be effected, much can be done by making treatment more freely available through extension of the village dispensary system and special treatment teams in mobile or movable dispensaries. These treatment teams should also undertake simple treatment for other conditions, especially schistosomiasis.

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TABLE 4

The Chief Infectious Diseases Treated at All Health Institutions

Diseases	1944	1945	1946	1947	1948	1949
Malaria	540,333	556,613	742,921	717,831	603,698	492,602
Trachoma	533,089	501,280	558,323	532,310	524,940	510,668
Venereal Diseases:						
Syphilis	19,372	27,550	33,104	25,625	23,168	25,255
Soft Chancre	3,802	3,510	3,025	3,753	1,428	3,283
Gonorrhoea	7,690	9,492	11,415	9,859	11,096	11,310
Dysentery	19,360	24,456	34,046	33,384	27,394	28,570
Schistosomiasis	15,852	18,744	21,029	24,923	24,272	27,388
Tuberculosis:						
Pulmonary	3,804	3,436	6,521	4,183	6,752	6,807
Other Forms	1,386	2,622	2,139	1,837	1,719	3,127
Influenza	13,906	18,070	26,291	24,882	29,572	29,993
Small Pox	178	59	1,468	62	2,025	736
Whooping Cough	1,957	2,329	2,968	5,344	4,452	4,175
Ankylostomiasis	6,332	7,319	13,992	12,041	8,927	10,754
Mumps	6,110	5,030	6,360	8,621	10,041	11,570
Sandfly Fever	2,070	842	4,688	3,711	1,248	1,521
Measles	809	657	1,468	2,147	1,812	1,936
Cancer	658	483	611	783	649	913
Typhoid Fever (group)	1,257	1,245	1,347	1,712	987	1,288
Erysipelas	314	284	288	304	337	306
Leprosy	217	279	240	223	270	179
Puerperal Fever	169	41	50	34	169	453
Plague	—	16	—	—	—	—
Diphtheria	210	237	283	406	903	612
Tetanus	160	171	136	141	239	236
Anthrax	133	178	170	213	206	186
Typhus Fever	791	491	170	379	154	72
Cerebro Spinal Fever	396	325	196	151	135	191
Scarlet Fever	1	11	31	6	185	6
Cholera	—	—	—	—	—	—
All Other Infectious Diseases	707	4,031	7,682	5,631	4,352	4,533
Total	1,181,053	1,189,801	1,480,962	1,420,496	1,291,225	1,178,670

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TABLE 5

CASES OF EYE DISEASES

Diseases	1944	1945	1946	1947	1948	1949
Trachoma	533,089	501,280	558,323	532,310	524,940	452,084
Conjunctivitis	410,522	422,572	481,877	447,425	445,376	510,668
Tumors of the Eye	5,806	7,699	7,371	9,460	10,258	6,575
Other Eye Diseases	65,615	71,626	60,428	58,256	51,985	70,392
Total	1,015,032	1,003,177	1,107,999	1,047,451	1,032,559	1,039,719

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TABLE 6

TREATMENTS FOR MALARIA AS PERCENTAGE OF TOTAL TREATMENTS AT HEALTH INSTITUTIONS

(By provinces: 1943-48)

Province	Total Treatments	Treatments for Malaria	Percentage
Baghdad	7,751,167	306,139	4
Basra	2,041,579	394,039	19
Mosul	2,909,256	475,065	16
Amara	1,769,157	102,172	6
Erbil	903,520	140,748	16
Diwaniya	2,000,261	300,043	15
Diyala	1,850,371	301,318	16
Dulaim	1,283,546	124,965	10
Hilla	2,131,928	487,170	23
Kerbela	2,180,664	487,886	22
Kirkuk	1,032,349	123,341	12
Kut	1,254,617	89,506	7
Muntafiq	1,624,345	240,525	15
Suleimaniya	1,005,355	97,714	10

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TABLE 7

Treatments for Malaria as Percentage of Total Treatments at Health Institutions

(By years)

Year	Total Treatments	Treatments for Malaria	Percentage
1923	317,615	57,552	18.1
1924	396,466	63,939	16.1
1925	501,925	86,688	17.3
*1926	645,392	175,923	27.3
1927	597,367	103,477	17.3
1928	636,861	87,467	13.7
*1929	1,035,524	158,902	15.3
1930	1,232,020	151,063	12.3
*1931	1,461,627	189,218	13.0
1932	1,600,933	178,871	11.2
*1933	2,113,273	239,629	11.3
1934	2,462,181	272,770	11.1
1935	3,882,079	338,804	8.7
*1936	3,780,982	640,967	17.0
1937	3,986,437	582,973	14.6
1938	4,093,753	524,292	12.8
1939	3,496,946	490,310	14.0
*1940	3,292,618	663,432	20.1
*1941	3,733,303	726,339	19.5
1942	3,875,657	575,780	14.9
1943	4,024,421	509,545	12.7
1944	4,368,327	540,333	12.4
1945	4,780,483	556,613	11.6
*1946	5,401,687	742,921	13.8
1947	5,586,725	717,831	12.8
1948	5,656,424	603,698	10.7
1949	5,876,336	492,602	8.4

* Flood year

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TABLE 8

Incidence of Schistosomiasis
(By provinces)

Province	Percentage of Incidence of Schistosomiasis
Baghdad	35
Basra	23
Mosul	0
Amara	67
Erbil	0
Diwaniya	26
Diyala	28
*Dulaim	36
Hilla	15
Kerbela	28
Kirkuk	0
Kut	48
Muntafiq	47
Suleimaniya	0

* Survey for all the districts of the province not yet completed.

TABLE 9

Cases of Schistosomiasis Treated
(By provinces)

Province	1944	1945	1946	1947	1948	1949
Baghdad	4,544	4,920	6,986	6,175	5,358	6,733
Basra	1,527	1,922	1,836	1,934	2,384	4,508
Mosul	83	92	110	85	90	59
Amara	865	973	1,300	1,518	1,680	843
Erbil	15	27	10	45	16	25
Diwaniya	1,546	2,142	2,035	2,024	2,756	3,166
Diyala	611	288	259	243	238	357
Dulaim	74	375	283	704	622	838
Hilla	594	2,158	802	2,381	1,514	1,113
Kerbela	1,077	930	1,471	1,567	1,544	1,458
Kirkuk	14	26	5	12	27	5
Kut	1,868	1,976	1,616	2,346	3,099	2,482
Muntafiq	2,969	2,909	4,310	5,890	4,942	5,801
Suleimaniya	5	6	6	2	2	—
Total	15,792	18,744	21,029	24,926	24,272	27,388

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TABLE 10

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FORMS OF TUBERCULOSIS TREATED AT ALL INSTITUTIONS

Form	1944	1945	1946	1947	1948	1949
1. Respiratory (Lungs & Larynx)	3,844	3,438	6,521	4,183	6,752	6,807
2. Meninges	2	922	44	52	19	56
3. Intestine, etc.	83	101	148	79	92	141
4. Spinal Cord	83	71	189	133	158	184
5. Bones and Joints	396	324	331	304	353	592
6. Skin	317	187	1,005	887	639	911
7. Glands	303	318	302	294	324	923
8. Genito-urinary System	7	19	21	10	15	12
9. Other Organs	138	659	61	71	107	212
10. Disseminated	17	21	38	7	12	96
Total	5,190	6,060	8,660	6,020	8,471	9,934

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1539

ONCE in ancient times there was or there was not a great landowner, master of vast estates, to whom the sheikhs of the Arabs and of the bedouin paid tribute and in God only is there belief.

The name of the landowner was Hassan, and he had a young wife beautiful as a moon, and a faithful slave who had been with him since boyhood and whose name was Ahmed, and Ahmed was devoted to his master and obeyed him in everything.

There came a year in which the Sultan sent a command to the landowner Hassan, and he appointed him Prince of the caravan which was setting out on the Pilgrimage. The wife of Hassan was at that very time with child, and Hassan loved her greatly, nor did he like to leave her. So he ordered that a seat and canopy should be prepared for her on a camel, and he said: It is fitting that my son be born on the Pilgrimage.

The Pilgrimage set out and its destination was Mecca, and it marched according to the orders of the Prince of the Caravan, and with him went his wife and Ahmed his faithful slave. And the caravan reached the Valley of Tos and halted there for the night. Now, with the caravan
• [164] were many Indian pilgrims, and amongst them was the sickness of cholera, and in the Valley of Tos the sickness spread to many men and many women in the caravan, and they rolled on the ground in the agony of death.

And on that very night the child in the wife of Hassan reached his appointed hour for entering the world, and Hassan said to his faithful slave: Summon the midwife and the wet nurses. For he had arranged for them to be with the caravan. But the slave Ahmed answered and said: Master, they are dead of the sickness. Then Hassan and the slave Ahmed attended themselves to the wife of Hassan

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161 taken, in 1947, gave the total population as 4,799,500; before that there were periodical official estimates as follows:

1930	2,824,000
1935	3,560,000
1943	3,995,000

The present population is probably about 5 million. According to the census, Baghdad has a population of 364,000, Mosul 302,000, Basra 94,000, and Kirkuk 69,000, Hilla being the only other town of over 50,000 inhabitants. Significant figures for density of population could be determined only after defining habitable land and distinguishing rural populations; the accepted density figure for the country as a whole (27·4 per square mile) means little. In the total cultivable area as calculated by an English authority the average density is 102 per square mile, but in many areas the density is much more than this for the rural population alone, and in the Baghdad and Basra districts exceeds 300 and 800 respectively per square mile.

163 *Vital Statistics.* For a number of reasons, which include the 165 inaccessibility of large areas of Iraq and the lack of doctors in the rural districts, vital statistics are not available for the 164 country as a whole. Statistics of possibly fair accuracy are, however, published for the population of some 1,160,000 served by the health centres in the main cities of Baghdad, Basra, and Mosul; the latest, compiled for 1950, show a birth-rate of 27 and a death-rate of 12 per 1,000, with an infant mortality figure of 97 per 1,000 live births. The main causes of death were stated as old age, respiratory diseases other than tuberculosis, malaria, heart diseases, and tuberculosis.

197 *Language.* Arabic is the official and most widely spoken language. The 800,000 odd Kurds speak an Iranian language in various forms. Turkish dialects are spoken in Irbil, Kirkuk, to some extent in Khanaqin and in smaller intervening towns, and Syriac by Christian communities in northern Iraq. Other minority languages, such as Armenian, also occur, while in the Holy Cities of the south (Kerbela and Najaf) Persian is widely spoken.

Religions[1]

642 The constitution declares Islam to be the official religion of the state, but guarantees complete freedom of conscience and worship in conformity with accepted customs subject only to the maintenance of public order and morality, declares the absolute equality of all Iraqis before the law, gives communities

[1] See above, p. 51ff.

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Chamber of Deputies. The deputies are elected on the basis of one to every 20,000 male Iraqi subjects. Every bill must be submitted to each Assembly in turn and then approved by the King.

The Cabinet consists of at least seven ministers, including the Prime Minister, under whose presidency it meets, and any ministers without portfolio. The Prime Minister is chosen by the King, who also appoints the other ministers on the recommendation of the Prime Minister. The ministers are responsible to the Chamber of Deputies, jointly in matters which concern the ministries and severally in what concerns their respective ministries and the departments under them.

The ministries are those of Foreign Affairs, Finance, Interior, Social Affairs, Defence, Justice, Education, Economics, Communications and Works, Health and Agriculture.

Administration

Iraq is divided into fourteen main administrative districts, or *liwas*. These are the *liwas* of Mosul, Arbil, Kirkuk, Sulaimania, Diala, Baghdad, Kut, Dulaim, Hilla, Kerbela, Diwaniya, Muntafiq, Amara, and Basra. Each *liwa* is administered by a *mutasarrif*, who is responsible to the Ministry of the Interior but is also the agent and representative of the other ministries.

Armed Forces and Police

The Iraqi army has an establishment of three divisions, comprising one mountain division, one plains division, and a cadre division which includes a mechanized force. There are a cadet and staff college and the usual service training schools. Military training is compulsory in Iraq for all men between 18 and 25, the period of actual service being 1½–2 years. Students of the secondary, technical, and religious schools are exempt, and exemption may in any case be bought after three months' training by a payment of ID50. Iraq has a small but efficient and expanding air force equipped with British operational aircraft. A flying training college has recently been established.

The police force, with a total strength of over 20,000, has a militarized force of 5,000 including a mechanized regiment, and a small camel corps which patrols the deserts in co-operation with armoured cars.

Public Health

Malaria, enteric fever, bilharzia, amoebic and bacillary dysentery, tuberculosis, ankylostomiasis, venereal diseases, and

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helminthosis are endemic. There are occasional outbreaks of smallpox, typhus, and more rarely plague and cholera. With the greater provision in the budget for schemes of public health, the increased employment of international specialists and the considerable assistance tendered by the World Health Organization, there is every prospect that the incidence of endemic diseases will be greatly reduced. Fundamental results may be expected from modern medical training, with emphasis on the environmental aspects of disease and the need for prevention as much as or even more than cure, and, above all, from the efforts of the administration to improve the environment itself, with especial reference to drainage and water-supply. In addition, attention is to be paid to the public health aspects of the pilgrimages. The curative services have in general received more attention than the preventive and have improved considerably in the past thirty years. Simple conditions are treated in some 400 state dispensaries, distributed fairly evenly throughout the country but varying in their equipment and staff; it has hitherto proved difficult to attract doctors to the provinces and particularly to the rural districts. Each *liwa* centre has a general hospital, the larger towns more than one. There are also specialized hospitals for maternity and child welfare, for infectious, chest, eye, venereal, and mental diseases, and for lepers. The army, police, railways, Port of Basra, Ministry of Education, and oil companies maintain their own medical services and hospitals, and there are in addition an American Mission Hospital and a number of private nursing homes. A five-year programme, financed by the Development Board, will provide for the repair, extension, and replacement of medical buildings which have become old or inadequate. There is an acute shortage of well-trained nurses; attempts to expand the service are hampered by the reluctance of Muslim girls of good family to enter it.

Education

The state provides elementary, intermediate, secondary, and higher education, all, since December 1952, completely free. There are also private and foreign schools on a kindergarten, elementary, intermediate, and secondary level.

State Education. Primary education, by law universal and compulsory where facilities exist, begins at the age of six and continues for six years. It has been limited by a shortage of schools and trained teachers, especially in the villages. Plans are in hand to meet the need. The rapid expansion of state primary education is demonstrated in the following table:

564 serve as latrines, while the use of the banks of streams or canals facilitates the ablutions required by Moslem rites. Frequent pollution of the water supplies promotes the spread of intestinal infections, which are prevalent among all groups of the population.

Fauna and Flora

136 164 Arthropods. Mosquitoes. Twelve species of anopheline mosquitoes have been recorded from different parts of the country, but the majority are regarded as of minor significance. Four species are of major interest in the transmission of malaria. 136 *Anopheles stephensi* is the primary vector throughout southern Iraq. *A. sacharovi* (— *A. elutus*) and *A. superpictus* are the principal vectors in the north, while *A. maculipennis maculipennis* is implicated in localized areas in the higher mountain valleys. *A. pulcherrimus* is widespread, particularly in the southern provinces, but is of doubtful importance in transmission. Other species, which are present to a varying extent in diverse localities, are *A. claviger*, *A. hyrcanus*, *A. multicolor*, *A. d'thali*, *A. fluviatilis*, *A. algeriensis* and *A. marteri*.

A. stephensi, the chief vector species in the south, is abundant in the irrigated date-growing areas along the Shatt al Arab and in the alluvial plains region, particularly in the Euphrates basin. It also occurs in various foci in the Tigris valley along the middle course of the river and in the Diyala basin to the edge of the foothills, as well as in the spring-fed oasis of Shifathah, in the desert west of Kerbela. It breeds in vegetated irrigation canals, seepage pools, borrow pits, shallows wells, hoofprints and other temporary collections of water. The larvae are found in greatest numbers from May to October, although breeding takes place throughout the year in the Gulf area. The prevalence of this species has increased appreciably within the last few decades, paralleling the expansion of irrigation facilities. At present it is the only proven vector in the Shatt al Arab and the lower delta areas.

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A. sacharovi was common in the tidal creek zone of the Shatt al Arab until 1947, but it has not been found since that date, possibly in part as the result of control operations which have been carried on in the vicinity of Basra. 136

A. sacharovi is probably the most dangerous vector of malaria in the steppe and the foothill regions. It exists in association with *A. stephensi* in the Diyala basin: occasionally it invades areas as far south as Baghdad, but it does not normally encroach on the alluvial plain. Throughout most of its northern range it shares the role of vector with *A. superpictus*. It breeds in irrigation seepages, along the grassy margins of sluggish canals, in the rice fields and sometimes in small streams overgrown with vegetation. It is plentiful from March to May and appears again in some numbers in October.

A. superpictus is widely distributed in the northern provinces and is the dominant vector in the mountain and the escarpment districts. It breeds not only in the numerous small, sunlit watercourses and gravelly stream beds, but also in the rice fields and other habitats. It is active from May to October, with a peak of prevalence in August and September.

A. maculipennis maculipennis is reported from the mountain districts along the Iranian frontier, where it replaces *A. sacharovi* as a vector. *A. pulcherrimus* is widespread from the Persian Gulf to the beginning of the foothills. It is found primarily in the south, decreasing in prevalence from the alluvial plain northward. This species probably has little or no direct part in malaria [164] transmission, but the predominance of its larvae over those of other anophelines in the marshes and the rice fields of the alluvial plain suggests that it may exert a restraining influence on the establishment of *A. stephensi* and other species in such habitats.

Several species of *Aedes* are encountered, 136
among which *A. caspius* is most abundant. 164
A. aegypti occurs in some sections of the

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southern provinces and has been held responsible for sporadic outbreaks of dengue fever. It is also a potential vector of urban yellow fever, although that disease is not reported from this region. Many varieties of Culex mosquitoes have been recorded, but none has been specifically implicated in the transmission of disease. *Culex quinquefasciatus* (= *C. fatigans*) or *C. pipiens* (each a potential vector of *Wuchereria bancrofti*) is present in most areas. 136 164

Within recent years extensive mosquito control work has been undertaken by municipal and government authorities, by the oil companies and, during World War II, by the British Expeditionary Forces. The problem is stupendous, involving the improvement and the regulation of the irrigation facilities on which the agricultural economy of the country depends. In 1947, malaria control was first attempted on a nation-wide basis with the creation of an antimalaria service within the Iraqi health organization. Since that date, control operations have been carried on in various highly endemic areas. Depending upon local conditions, they have included antilarval measures, drainage works and residual spraying of the rural villages with DDT preparations. In 1952, a demonstration DDT house-spraying program was initiated in the hyperendemic Tanjero Valley of Sulaimaniya *liwa* (province), in conjunction with the World Health Organization. 744 136 312 744 164

FLIES. Flies are prevalent in all parts of the country. Numerous species of MUSCIDAE are encountered, many of which are implicated in the mechanical transmission of intestinal and eye diseases. *Musca sorbens* and *M. domestica vicina* are most frequently incriminated, but *M. tempestiva*, *M. vitripennis* and *M. mesopotamiensis* are also abundant. The larvae of *Fannia canicularis* sometimes cause myiasis in the livestock. The stable fly, *Stomoxys calcitrans*, is almost ubiquitous. At least 22 species of *Tabanus* are recorded, and many local authorities believe that they are involved in the mechanical transmission of anthrax. 136 164 136 232 164

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136 164 Several species of *Chrysops*, including *C. punctifera*, are known to be present.

232 Among the myiasis-producing flies which attack animals, and incidentally man, the most numerous are *Chrysomyia albiceps;* the blow fly, *Calliphora erythrocephala;* the green-bottle fly, *Lucilia sericata;* the horse bot fly, *Gasterophilus nasalis;* the sheep bot fly, *Oestrus ovis;* and the flesh fly, *Sarcophaga hirtipes.*

136 164 At least 12 species of sandflies are found. They are serious pests and may produce a form of dermatitis in susceptible individuals. The most widespread species is *Phlebotomus papatasii*, the vector of sandfly fever throughout this area. *P. sergenti* is abundant in the central and the southern provinces and in sections of the northern. It transmits cutaneous leishmaniasis and is apparently the only vector in Iraq, although *P. papatasii* is also implicated in adjacent territories. Potential vectors of kala-azar may be present in the northwest, but the disease is almost never reported.

Several species of SIMULIDAE occur in the hilly districts. The biting midge, *Leptoconops mesopotamiensis*, is an annoying pest.

LICE. All 3 species of human lice, *Pediculus humanus corporis*, *P. humanus capitis* and *Phthirus pubis*, are common, especially among the poorer sections of the population. *P. humanus corporis* is important as the vector of louse-borne typhus and louse-borne relapsing fever, both of which are endemic.

136 164 232 FLEAS. The only flea of primary medical importance is the Oriental rat flea, *Xenopsylla cheopis*. It parasitizes the rats and other rodents and is the vector in sporadic outbreaks of murine typhus and plague. The human flea, *Pulex irritans*, and the cat and the dog fleas, *Ctenocephalides felis* and *C. canis*, are plentiful in most areas.

136 BEDBUGS. The bedbug, *Cimex lectularius*, is indigenous. The tropical species, *C. hemipterus*, is frequently encountered in Baghdad, Basra and other cities, but is seldom seen in the rural villages.

600 TICKS AND MITES. Numerous species of

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TICKS AND MITES. NUMEROUS SPECIES OF ticks infest the livestock, including *Rhipicephalus sanguineus*, *Hyalomma dromedarii* and *Haemaphysalis cinnabarina punctata*. *Ornithodorus tholozani* occurs in many localities, and is the vector in sporadic cases of tick-borne relapsing fever. *O. savignyi* is present in the desert areas. The fowl or blue Persian tick, *Argas persicus*, and the castor bean tick, *Ixodes ricinus*, are widespread.

The itch mite, *Sarcoptes scabiei*, is prevalent, especially in the congested urban communities and rural villages. The grain itch mite, *Pediculoides ventricosus*, is a frequent pest in the grain-growing districts.

SCORPIONS AND SPIDERS. Scorpions are common, particularly in the northern provinces. The most dangerous species are *Buthus australis* and *B. crassicauda*. *B. europaeus* is also present. A few deaths from scorpion stings are reported each year, usually among young children or old people. *Scorpio maurus kruglovi* is sometimes encountered in the plains and *S. maurus townsendi* in the Persian Gulf region. The principal poisonous spider in Iraq is *Lycosa tarantula*.

OTHER ARTHROPODS. *Reduvius tabidus* and *R. annulipes* are found in many areas. The "date beetle," a large aquatic species of the family BELASTOMIDAE, is capable of causing serious bites.

Reptiles. Twenty-six species of snakes have been recorded from Iraq, but only 5 land varieties are venomous. Casualties from snake bites are reported occasionally. A large proportion of the fatalities is probably caused by the Levantine or blunt-nosed viper, *Vipera lebetina lebetina*, which inhabits the northeastern highlands from north of Baghdad to the Turkish and the Iranian frontiers. *V. lebetina euphratica* is also seen in some localities. The horned viper, *Aspis cerastes* (— *Cerastes cornutus*), is native to the alluvial plains, while the carpet viper, *Echis carinatus*, is found in limited areas in Diwaniya province. The hoodless cobra, *Naja morgani*, is widely distributed but apparently is rare. The poison-

ous sea snake, *Enhydrina shistosa*, roams the Persian Gulf and the Shatt al Arab. Although it may be dangerous to fishermen, no fatalities are known to have occurred. 136 752 165

Rodents. *Rattus rattus frugivorus* is the rat most frequently encountered in Iraqi dwellings. *R. rattus alexandrinus* is also indigenous, while *R. norvegicus* is present in Basra, Baghdad and the river towns. *Nesokia buxtoni*, *Dipodillus dasyurus* and *Meriones charion* are reported from different localities. Rats are often captured in Baghdad and Basra and examined for evidences of plague, but otherwise little rodent control work is undertaken, except at the time of plague outbreaks. 136 164

Mollusks.* *Bulinus truncatus* (— *B. contortus*), the intermediate snail host of *Schistosoma haematobium*, is found in numerous foci in central and southern Iraq, where pump or gravity flow irrigation is employed. It inhabits the many small and sluggish irrigation canals and the rice fields, borrow pits, marshes and other suitable collections of water, but is strictly seasonal in appearance, being abundant only in the summer and the fall months, from May or June to November. The snails are widespread in Basra, Muntafiq, Diwaniya and Amarah provinces in the south, but are absent from the Shatt al Arab region south of Basra, where breeding is restricted by the salinity of the water. They are more scattered in distribution in the central provinces and practically nonexistent in the north, aside from localized foci around the marshlands of the Mosul area. *Radix lagotis canaliculata*, a vector of *S. turkestanicum* which causes serious infections among the livestock, is found in the rice fields and the marshes of the southern delta. 136 232

The threat of the spread of *Bulinus truncatus*, and subsequently of schistosomiasis, with the expansion of irrigation creates a problem which is of major public health and economic importance to the country. Small-scale snail-control campaigns have been undertaken in the past in Baghdad, Basra and 136 164 944

* See footnote, page 10.

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83:Shannons et al G-5 (1941-1951) 1954
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Diwaniya provinces. In 1949, a co-ordinated control program was introduced by the Iraqi government, and a Bilharzia Section was established within the national health organization. The section initiated a snail survey in the various endemic foci and research on the most effective methods of snail control. It carries on continuous snail destruction work through special units assigned to each of the infected provinces. 136 164 744

Plants. Little precise information is available regarding the prevalence of allergy-producing plants, but numerous weeds, grasses and trees, which have been incriminated in other countries, are present in districts with rainfall adequate to support such vegetation. 137 752

Occasional deaths, primarily among young children, have been traced to the consumption of the raw beans of *Vicia fava*, a prominent food crop throughout this region. The beans are toxic to susceptible individuals in the raw state. Plants of the *Senecio* group grow in sections of the northern highlands. The young green shoots are poisonous and sometimes cause fatalities among the livestock. 137 165 232

Food Sanitation

The government and municipal health authorities are responsible for the enforcement of regulations governing the sanitary quality of foods, meats and milk products, but the degree of enforcement varies in different localities. Health inspectors are charged with the supervision of establishments where foods are prepared or sold, such as foodshops, markets, restaurants and cafés, mineral-water bottling works and date-packing houses. Examinations for the presence of venereal diseases are theoretically required at regular intervals in the case of cooks and barbers, but no tests to detect other infections are carried out. 744

Meat animals are inspected before and after slaughter in the city abattoirs by officers of the government veterinary and health services. All carcasses offered for sale are supposed to bear an official stamp of

744 approval, but illegal slaughtering takes place in many areas. No effective control is carried out in the rural villages, where the animals are slaughtered locally.

234 Milk from cows and goats is marketed by
744 large numbers of small producers. Government regulations exist for the sanitary inspection of dairies and the periodic tuberculin testing of cattle. In practice, however, few controls are exercised over the methods of production or the quality of the product. There is only one pasteurization plant in the country. This is located in Baghdad, and is operated by the government's Agriculture Department. It was established primarily for the purpose of supplying pasteurized milk to the child welfare centers, but a small percentage of its output is sold
234 to private customers. Milk is customarily
164 boiled before use, but butter and cheese
232 are often vehicles for the spread of brucellosis and other diseases. Brucellosis is enzootic among the cattle and the goats, and bovine tuberculosis among the dairy herds.

HEALTH SERVICES AND MEDICAL FACILITIES

Health Organizations

744 Responsibility for the protection of the
657 public health and for the provision of medical care facilities is centralized in the Ministry of Health of the Iraqi government, with headquarters in Baghdad. The Ministry was established in 1952, replacing the former Directorate General of Health in the Ministry of Social Affairs. Under the present organization, the Minister of Health is assisted by a Director General of Health, in charge of health and medical services, and by an Inspector General of Health. The Minister also has jurisdiction over the Royal Faculty of Medicine which administers the Royal Hospital and the Royal College of Medicine in Baghdad.

The functional activities of the Ministry are concentrated in two major divisions—curative medicine and preventive and social medicine—as well as in a number of admin-

ISTRATIVE BRANCHES.
p. 32(A)

63:Simmons et al G-5 (1941-1951) 1964
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offers 5-year courses for the training of fully qualified pharmacists. 874

Personnel

Physicians. The physicians registered in Iraq in 1950 totaled 811. Of this number, 543 were employed full or part time with governmental agencies. One hundred and ninety-two doctors were in private practice, and 6 were retired. Seventy were non-Iraqi, most of whom were working with the government, with the oil industry or with philanthropic organizations. The distribution of medical practitioners is extremely uneven; 444, or almost one half of the total in the country, were located in Baghdad province. The proportion of doctors in the Baghdad area averaged 55 to 70 per 100,000 population, as against 4 to 6 in the rural provinces. 754

Dentists. The registration for 1950 included 72 dentists, 29 in government service and 43 in private practice. Over 86 per cent of the latter group were established in Baghdad.

Nurses. There were 601 nurses in 1950, 497 of whom were employed in government institutions. The majority are probably graduates of the School of Nursing and Midwifery. Five British nurses were affiliated with the Ministry in 1951.

Other. Also in 1950, 803 midwives were licensed as "qualified" midwives, while an additional 9 were fully trained. Other medical personnel in the country included 69 pharmacists, 236 health officials or medical assistants, 341 vaccinators and 1,002 dressers.

DISEASES

The information available regarding the distribution and the prevalence of infectious diseases is sketchy. The official statistics compiled from the records of the government hospitals and dispensaries are derived only from institutions under the jurisdiction of medical officers, and are therefore limited in scope. The reporting of cases of 164

63:Simmons et al G-5 (1943-1951) 1954
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illness and death in the rural areas is incomplete and unreliable. An unduly large proportion of the medical personnel is concentrated in Baghdad, Basra, Mosul and other cities, while the inhabitants in many of the more remote districts receive little or no medical attention. Local authorities estimate that, in the case of most diseases, the official reports represent about one tenth of the probable prevalence. The mortality statistics are of questionable value, since the deaths in rural communities are often certified by nonmedical officials, and a considerable percentage are listed as due to unknown causes. Investigations undertaken by the staff of the Royal Hospital and the Royal College of Medicine, the Department of Endemic Diseases and other organizations contribute supplementary information on the nature and the prevalence of specific infections, as malaria and schistosomiasis.

Diseases Spread or Contracted Chiefly Through Intestinal or Urinary Tract

Typhoid and Paratyphoid Fevers. Enteric fevers are endemic: from 559 to 842 cases of typhoid fever and from 97 to 230 cases of paratyphoid fever were reported annually in the 6 years 1944-49. About 70 to 80 per cent of the known cases are classified as typhoid fever. The relative prevalence of paratyphoid A and B infections is uncertain, however, as differential diagnostic tests are seldom attempted, except in the central bacteriologic laboratory in Baghdad. Few large-scale epidemics have been reported since the improvement of the water supplies in the larger cities, but localized outbreaks, caused by contaminated food or water supplies, are numerous. Cases occur throughout the year, with the peak of incidence in the summer months, from July to October. Sporadic cases of paratyphoid C fever have been recorded, some of which have been associated with primary meningeal symptoms.

Dysenteries. Both bacillary and amebic dysentery are widespread. Amebiasis is ap-

164 ● 165 164 [364]
p. 36(A)

164 parently of primary importance in all parts of the country, particularly in the lower delta region. Local authorities estimate that 25 to 35 per cent of the inhabitants in Baghdad harbor cysts of *Endamoeba histolytica*, while in Basra the carrier rate probably approximates 60 to 70 per cent. Liver abscesses are frequently encountered.

The actual distribution of bacillary infections is unknown, since the proportion of cases treated by medical officers is unduly small, and few facilities for confirmatory diagnosis are available. According to the official statistics for 1944 through 1949, from 17,000 to 30,000 cases of amebic dysentery and from 180 to 1,100 cases of bacillary dysentery were reported each year. Correspondingly, an analysis of the cases treated annually in the hospitals and the dispensaries of the Iraq Petroleum Company in the Kirkuk oil field and pipeline areas, in the 4 years 1946-50, shows that from 478 to 1,603 were amebic infections and from 58 to 175 bacillary. The Flexner group predominates among the *Shigella* strains isolated in dysentery cases at the Royal Hospital in Baghdad, but Sonne, Schmitz and Shiga types are also numerous.

136 515 164 165 The abundance of flies and the insanitary habits of the people favor the spread of intestinal infections. Diarrhea and enteritis are major causes of illness and death, especially in early childhood. Giardiasis is common. Outbreaks of food poisoning, undoubtedly caused by various strains of *Salmonella*, are frequent.

164 484 Cholera. Epidemics of cholera were formerly recurrent in the border districts and along the trade routes from India and the East. Although some authorities believe that an endemic focus may have existed in the Shatt al Arab region in the past, most epidemics have resulted from the introduction of the disease by way of traffic through the Persian Gulf ports or by overland travel through Iran, often in connection with pilgrimages to Mecca or local Shia shrines. 164 Within recent decades extensive outbreaks, each totaling from 1,500 to 2,500 cases,

were reported in 1923, 1927 and 1931. Since 1931, cholera has been almost completely absent from the country, although one imported case was recorded in 1939, when the disease was epidemic in Afghanistan and Iran. 164

Strict quarantine regulations are enforced, and travelers from India, Pakistan and Ceylon, as well as pilgrims from Mecca, without valid certificates of immunization against cholera are retained in quarantine centers for a period of 7 days. Mass immunization with cholera vaccine is carried on among the populations in the border provinces whenever epidemics are reported from the adjacent territories. At the time of the recent epidemic in Egypt, in 1947, immunization was compulsory for all travelers entering the country and for the inhabitants of towns and villages along the Syrian frontier. 744 484 164 751 164

Helminthiases. SCHISTOSOMIASIS. Schistosomiasis, caused by *Schistosoma haematobium*, has probably been present in the lower Tigris and Euphrates river basins since ancient times. It is highly endemic in the southern and the central provinces, where the intermediate snail host, *Bulinus truncatus*, is found in widespread but often localized foci. The disease is prevalent among the children and among the agricultural and other laborers who work in infested waters, particularly the men and the boys, who are exposed to infection to a greater extent than the women. It reaches maximum proportions between 10 and 20 years of age, but is usually negligible in early childhood. Transmission is seasonal: it takes place from May to the end of November, but primarily between June and October, when infected snails are most abundant. The insanitary customs of the inhabitants, associated with the frequent use of the canals for religious ablutions and the severe summer heat which is conducive to bathing in any convenient body of water, are contributory factors. The infection rates average 18 to 25 per cent in the irrigated districts of the delta, but vary from zero 164 136 164 462 164 515 164 361

63:Simmons et al G-6 (1941-1951) 1964
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Distribution of Schistosomiasis in Iraq

to 80 per cent in different localities. The disease is most extensive in the southern provinces and particularly in the vicinity of the Hammar lakes and the Amarah marshes. It is absent south of Basra, however, since the salinity of the waters along the Shatt al Arab interferes with the breeding of the intermediate snail host. Foci of infection decrease in prevalence toward the north, but spread along the Euphrates to the Syrian border and, in the east, as far as the upper reaches of the Tigris and its main tributary, the Diyala. As yet the districts bordering the Great Zab and the Little Zab rivers are uninfected. The northern *liwas*, or provinces, of Erbil, Kirkuk and Sulaimaniya are apparently free from the disease, but a few isolated foci exist south of the foothills in Mosul.

Surveys based upon the examination of urine specimens collected from men and boys in representative villages in 1949-50[24] suggest a mean infection rate of 67 per cent in Amarah *liwa* which, because of the predominance of marshlands, is one of the most seriously infected areas in the country. In Basra *liwa* the rate averaged 23 per cent, but ranged from 26 per cent in the city of

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164 361 369 Basra to 75 per cent at Al Qurnah, in the fork between the rivers. In Muntafiq, the mean rate was 47 per cent, and in Diwaniya, 26 per cent, although some districts were heavily infected and others practically free. In central Iraq the disease was more irregular in distribution. In Baghdad *liwa* the infection rates averaged 35 per cent, but approached 80 per cent in some localities. In Kut, the mean was 48 per cent, with a decrease in prevalence toward the Iranian frontier. In Hilla, it was 15 per cent, with variations from 5 to 50 per cent, and in Kerbela, 28 per cent, with variations from 18 to 48 per cent. In the areas studied in Diyala *liwa* it ranged from 28 to 60 per cent, and in Dulaim it approximated 36 per cent. Subsequent surveys have revealed 11 to 18 per cent infection in limited foci near the marshes in Mosul *liwa*.

164 361 369 742 In a survey conducted in Baghdad in 1950-51,[87] ova of *S. haematobium* were found in 25 per cent of the urine samples collected from 285 schoolchildren and in 46 per cent of the samples from 242 inhabitants in hut settlements on the outskirts of the city. The prevalence was around 20 to 25 per cent in the suburbs, but reached 83 per cent in foci along the main road to Teheran.

164 462 Indigenous cases of *S. mansoni* infection have not been reported, but numerous cases of rectal involvement with *S. haematobium* have been observed. A dermatitis produced by nonhuman schistosome cercariae is common in the south and is often responsible for considerable disability among the agricultural workers.

164 462 312 744 Schistosomiasis constitutes one of the most important disease problems in Iraq. It is of major public health and economic significance, and the possibility of its spread with the expansion of irrigation is a matter of considerable concern to the government authorities. An active schistosomiasis control program is carried on by the Bilharzia Section of the Department of Endemic Diseases. This section maintains snail destruction and treatment units in the affected

provinces, and conducts research and field investigations on the distribution and the control of the disease and the intermediate snail host. In the 7 years 1944-50, from 15,800 to 27,300 persons were treated annually in government hospitals and dispensaries. The disease is considered commonplace in most areas, however, and probably not over 5 to 6 per cent of the infected individuals seek treatment under ordinary conditions. Since 1949, special dispensaries have been established in Baghdad, Basra and Kufa, while mobile clinics tour the most seriously infected districts. In 1950, there were 11 mobile units for the treatment of schistosomiasis, malaria and hookworm infection among the rural populations.

ANCYLOSTOMIASIS. Ancylostomiasis is widespread in the irrigated areas, but the exact distribution and severity of the infection in the different provinces are not accurately known. *Ancylostoma duodenale* is the only species found in the foci studied. The infection rates are generally estimated at 10 to 20 per cent in the northern provinces and at 40 per cent in the southern. They are especially high in the Amarah and the Al Qurnah regions, but decrease toward the south, and are relatively low in the districts along the Shatt al Arab. In a study reported in 1939,[47] fecal specimens from apparently healthy men, 18 to 20 years of age, from various parts of the country were examined for hookworm ova. The presence of ova was detected in 25 per cent of the specimens from 125 men from Baghdad and in 46 per cent from 135 men from the rural districts of Baghdad *liwa*. Comparable examinations revealed ova in the specimens from 26 per cent of the individuals examined from Diyala *liwa* and from 25 per cent of the individuals from Dulaim. The degree of infection is usually mild, but serious cases with hemoglobin indices as low as 10 per cent are not infrequent.

Treatment facilities are provided by the schistosomiasis control units, as well as by the government hospitals and dispensaries.

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An ancylostomiasis section is incorporated in the Department of Endemic Diseases, and a program for the improvement of rural sanitation is being developed by the health authorities. 164 744

OTHER HELMINTH INFECTIONS. A large proportion of the inhabitants harbor one or more types of intestinal worms. Ascariasis predominates in the northern and the central provinces. Heavy infections, often with intestinal obstruction, are common. In the studies made on groups of men of 18 to 20 years of age, as indicated above, ova of *Ascaris lumbricoides* were found in the fecal specimens from 10 per cent of the 125 individuals examined in Baghdad city. In the provinces, ova were detected in fecal samples from 9 per cent of 135 persons from Baghdad, from 15 per cent of 145 persons from Dulaim and from 13 per cent of 309 persons from Diyala. 164 136 742

Enterobiasis, trichuriasis and, to a lesser extent, strongyloidiasis are prevalent. *Trichostrongylus*, a parasite of sheep and goats which sometimes infects man, is widely distributed in the Shatt al Arab region. Infections with the dwarf tapeworm, *Hymenolepis nana*, are numerous. The beef tapeworm, *Taenia saginata*, is often encountered, but not as widely as in Syria and other Arab countries where more raw meat is customarily consumed. The pork tapeworm, *T. solium*, is occasionally observed in the Christian communities. 164 136 232

Hydatid disease is endemic, especially in the central provinces. Stray dogs are numerous and serve as primary reservoirs of infection. In a survey published in 1940,[46] adults of *Echinococcus granulosus* were found in 18 per cent of 123 street dogs examined in Baghdad. Hydatid cysts were seen in the carcasses of 12 per cent of 2,347 sheep and goats slaughtered in the municipal abattoir and in 25 per cent of 223 cattle. 164 136 232 742

Other Infections. Brucellosis is enzootic among goats, sheep and cattle, and sporadic human infections result from the consumption of cheese, *leban* and other unboiled 164 232 758

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milk products, or from contact with infected animals. From 5 to 97 cases were treated annually in government institutions in the 6 years 1944-49. In the examination of 2,548 blood serum specimens sent to the Wassermann laboratory in Baghdad in 1938,[4] positive agglutination with Brucella antigens was obtained in 6 per cent. *Br. melitensis* was isolated from 5 of the 13 samples from which bacteriologic cultures were made.

Diseases Spread Chiefly Through the Respiratory Tract

Tuberculosis. Tuberculosis is among the most serious diseases in Iraq. In 1944-49, from 3,400 to 6,800 cases of pulmonary and from 1,400 to 3,100 of nonpulmonary tuberculosis were recorded annually. Such figures are of little value in assessing the problem, however, due to inadequate reporting and the shortage of diagnostic and treatment facilities. Local authorities estimate that the prevalence of latent or active infections approximates at least 25 to 30 per cent in many villages in the vicinity of Kirkuk and Basra, and undoubtedly in other areas. Widespread undernutrition and low standards of living, associated with overcrowding and ignorance of the basic principles of hygiene, are factors contributing to the spread of the disease. The death rates are known to be high, but little precise information is available. It is believed that a considerable number of tuberculosis deaths are erroneously attributed to pneumonia and other respiratory infections. Moreover, the inhabitants are often reluctant to admit the presence of tuberculosis in the family due to the stigma customarily attached to the disease. In the decade 1941-50, an average of 760 cases were treated in government hospitals each year, with a fatality rate of about 25 per cent. The maximum number of cases occurred in the group from 16 to 30 years of age.

All types of tuberculosis are encountered. Involvement of the bones or the glands accounts for a large proportion of the non-

164 pulmonary infections, but tuberculous meningitis is common in young children. Among 838 cases of nonpulmonary tuberculosis admitted to the surgical wards of the Royal Hospital in the 4 years 1947-50,[24] over 26 per cent were diagnosed as lymphadenitis and over 21 per cent as infections of the spine.

164 743 The new 400-bed sanatorium opened near Baghdad under the joint auspices of the Anti-Tuberculosis Society and the government health authorities in 1951 was the first tuberculosis hospital in the country. Previously, facilities for the treatment of tuberculous cases were provided only in the provincial hospitals, or in sanatoria in Syria and Lebanon, where the Ministry of Health subsidizes about 200 beds for the use of Iraqi patients. Plans have been projected by the Ministry for the construction of tuberculosis hospitals in each of the provinces: a 120-bed hospital was completed in Basra in 1952, and it was anticipated that hospitals would soon be ready for use in Kirkuk and Mosul. As of 1950, the dispensaries available for the treatment of chest diseases totaled 6, of which 2 were located in Baghdad and one each in Mosul, Kirkuk Diwaniya and Sulaimaniya. X-ray laboratories were maintained in Baghdad, Kirkuk and Mosul.

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751 A BCG inoculation and tuberculin testing program was initiated by the Ministry in 1952, in conjunction with the World Health Organization and the United Nations International Children's Emergency Fund. It is proposed to concentrate at first on the children and the adolescents in the larger cities. In 1952 also, the World Health Organization sponsored the establishment of a tuberculosis demonstration and training center at the Royal Hospital in Baghdad.

164 Smallpox. Epidemics of smallpox break out almost annually, and reach major proportions at intervals of 3 to 8 years. Since 1930, large-scale epidemics were reported in 1932-33, 1940-42, 1946 and 1948-49. In the 1932-33 outbreaks, the peak of incidence came in 1932, when 2,318 cases were re-

164 corded; in 1940-42, a peak of 2,098 cases was noted in 1941. Over 1,460 cases were treated by the medical officers in 1946 and 2,026 in 1948, with a decrease to 736 cases in 1949. In the intervening years the recorded prevalence ranged from 18 to 700 [165] cases. The fatality rates have varied in different outbreaks from 5 to 40 per cent.

751 Vaccination against smallpox is required
361 theoretically, but enforcement is difficult in the more remote villages, and particularly among the transitory laborers and nomadic tribes. In some sections, as in the date-growing areas, mass vaccination campaigns are carried on during the date harvest season, when people flock to the groves and the packing sheds in search of work. At the time of an epidemic, vaccination is compulsory among all the affected populations.

164 Diphtheria. Diphtheria is endemic, and localized outbreaks are observed from time to time. In the absence of Schick test surveys, however, little is known regarding the extent of infection in the general population. In the 6 years 1944-49, the recorded incidence rose from 210 cases in 1944 to 903 in 1948 and 612 in 1949—an apparent increase which is attributed by the local authorities to improved facilities for diagnosis.

751 Immunization against diphtheria is pro-
164 vided in many of the schools in the larger cities and in certain of the child health centers.

164 Meningitis. Outbreaks of meningococcus
165 meningitis are sporadic, usually occurring during the winter months. In the 12-year period 1939-50, from 112 to 489 cases were recorded each year, while the fatality rates ranged from 8 to 35 per cent.

164 Other Infections. The pneumonias are prevalent, and are major causes of death in all age groups. Outbreaks of influenza are recurrent. Measles, whooping cough, chickenpox and mumps are endemic, and often epidemic. The cases of whooping cough are typically severe, and the mortality among the undernourished children is normally high.

Occasional cases of scarlet fever are en-

countered. The prevalence rarely exceeds 5 to 20 cases a year, but, in 1948, outbreaks totaling 185 cases were recorded. Rheumatic fever is one of the most important diseases of childhood, particularly in Baghdad. From 10,000 to 23,000 cases were treated annually in the government hospitals and dispensaries throughout the country in 1944-49. Poliomyelitis was formerly regarded as sporadic, but cases are being recognized with increasing frequency. With improved diagnostic facilities, 70 to 100 cases have been reported annually since 1949 from the children's hospital in Baghdad.

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Diseases Spread or Contracted Chiefly Through Contact

Venereal Diseases. All forms of venereal disease are encountered, especially in the urban communities. Syphilis predominates among the recognized cases; congenital syphilis is common. The prevalence of the disease in Baghdad and other cities is estimated locally at between 2 and 10 per cent. Chancroid and gonorrhea are widespread, but the extent of infection in the general population is not accurately known. Lymphogranuloma venereum and granuloma inguinale are relatively rare. The cases of venereal disease treated in government institutions averaged about 38,600 annually in the 6 years 1944-49. Roughly 65 per cent were diagnosed as syphilis, 26 per cent as gonorrhea and 9 per cent as chancroid. Treatment is provided by the health authorities in the various general hospitals and dispensaries, as well as in 2 special venereal disease hospitals.

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Bejel is widely distributed among the nomadic and the seminomadic peoples in the Tigris and the Euphrates valleys and around the marshes and the lakes in the lower delta region. Apparently a form of syphilis transmitted by nonvenereal contact, the disease is characterized by a predominance of mucocutaneous lesions, usually with a high degree of oral and pharyngeal involvement. It is associated with primitive conditions of living, and is most extensive

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63:Simmons et al G-5 (1941-1951) 1954
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Bejel in Iraq. Areas of Greatest Prevalence

in the settlements bordering the larger rivers and the marshes, where it is known locally by different names, chiefly *bejel*, *lawath* and *abou khisian*. It is believed that at least two thirds of the infections are acquired in childhood, with the maximum transmission between 2 and 5 years of age. Serious foci, in which the disease sometimes reaches epidemic proportions, exist in the southeastern provinces and along the Tigris and its tributaries in Mosul *liwa*. The districts around the Amarah marshes are probably the most severely affected, but infection rates of over 50 per cent are found in many villages in Amarah, Muntafiq, Basra and Mosul *liwas*. An important focus also persists in Dulaim *liwa*, in the vicinity of Hit and Ramadi. Surveys have shown moderately high infection rates in some villages, while in others the existence of 20 to 25 per cent of seropositive latent cases is suggestive of epidemic conditions in the recent past. The disease is present among the Bedouin tribes of the desert, but is absent among the Kurdish populations of the northeastern mountain districts. Indigenous cases are seldom seen in the towns, although a focus has been established in Baghdad,

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164 369 where the infection was introduced by refugees from Amarah and has spread in the *serifa* settlements and the slum sections of the city.

744 164 A syphilis and bejel control program was initiated in 1950 by the government health authorities, in conjunction with the World Health Organization and the United Nations International Children's Emergency Fund. A dispensary and training center and research laboratories are maintained at the headquarters in Baghdad, while field units conduct surveys and mass treatment campaigns in the provinces. Investigations on the distribution and the relative prevalence of the infection, the significance of possible [758] insect vectors, the most effective methods of treatment and the radiologic and the serologic aspects of the disease are being carried forward by the headquarters and field personnel.

164 768 **Diseases of the Eyes.** Trachoma is widespread, and is regarded by many as one of the most important endemic diseases in the country. The cases treated in government institutions usually average over 164 500,000 a year. The infection rates are uniformly high in the central provinces, and, in 1950, were calculated at over 233 per 1,000 population in Baghdad, 195 in Kerbela, 140 in Diyala and 102 in Hilla *liwas*. In the remaining provinces they ranged from 24 to 70 per 1,000. The density of population and the concentration of medical facilities in central Iraq cast some doubt, however, that such figures are representative of the degree of infection in the different regions. Cases of advanced trachoma are common, while local authorities estimate that 25 to 40 per cent of the children in many districts suffer from some form of the disease. Statistics from the government hospitals and dispensaries for the 15 years from 1929 through 1943 show that 53 per cent of all the eye diseases treated and 26 to 36 per cent of the total infections were trachomatous in origin.

Conjunctivitis, including both infectious and noninfectious types, is almost equally

164 prevalent. In most areas the prominence of eye lesions is aggravated by the frequency of dust-laden winds and by the glare of the sun. Conjunctivitis is the leading cause of morbidity among the employees of the Iraq Petroleum Company in the Kirkuk oil field and pipeline stations. It comprises almost one half of the cases of infectious disease treated each year. Gonococcal ophthalmia is responsible for considerable blindness, particularly in the urban communities. The Ministry of Health operates 3 ophthalmic hospitals and 5 dispensaries in Baghdad and other cities, and provides special facilities for the treatment of eye diseases in the provincial hospitals and dispensaries.

Diseases of the Skin. The low standards of hygiene prevailing among both urban and rural populations are conducive to the spread of skin infections. Mycotic infections of various types are seen in large numbers. Favus predominates: from 10 to 15 cases constitute the usual daily quota at the clinic of the Royal Hospital in Baghdad. Cases of actinomycosis and Madura foot are often observed. Impetigo and erysipelas are common. Scabies is widespread. Phagedenic ulcers and cases of human myiasis are encountered from time to time. A form of dermatitis, caused by contact with cercariae of nonhuman strains of *Schistosoma*, is frequent in the southern provinces. The bites of sandflies produce skin lesions in susceptible individuals, and are apt to become infected.

Leprosy. Leprosy is endemic, especially in the marsh and the lake districts of the south. The actual prevalence of the disease is uncertain, but local observers estimate that it probably does not exceed 400 to 500 cases. From 179 to 279 cases were reported annually in 1944-49, with from 46 to 86 new infections. A focus formerly existed around Baghdad, but within recent years relatively few indigenous cases have been found in the central and the northern provinces. A leper colony is maintained by the government on an island near Amarah: it usually has 250 TO 300 PATIENTS IN RESIDENCE.

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to 300 patients in residence. A comprehensive leprosy control program is planned for the near future by the Ministry, in co-operation with the World Health Organization. 000 744

Other Infections. Rabies is enzootic among dogs, jackals and other animals. The jackals, the principal reservoir, often invade the villages and the outlying sections of the towns. Human infections occur sporadically: in 1944-49, the recorded cases averaged from 4 to 32 a year. In the same period, from 739 to 1,365 persons were treated annually at the Antirabic Institute in Baghdad. The majority gave a history of having been bitten by rabid dogs. The Institute also prepares rabies vaccine for distribution throughout the country. 232 164 [745]

Anthrax is prevalent among the sheep. From 130 to 225 human cases are reported annually among persons in contact with infected animals, or among individuals working with hides or wool. Tetanus is sporadic: the known incidence totals 130 to 250 cases each year. Tetanus neonatorum is common, especially in the rural areas. Cases of human glanders are seen from time to time. Leptospirosis, or Weil's disease, is occasionally encountered in the southern provinces. However, no evidence of infection with *Leptospira icterohaemorrhagiae* has yet been found among the rats captured in Baghdad.

Diseases Spread by Arthropods

Malaria. Malaria is endemic or hyperendemic throughout most of Iraq. The distribution and the severity of the disease vary with the physiographic features of the different regions and the amount and the type of irrigation. It has always been regarded as a disease of primary importance in the country, but within the last few decades it has become increasingly prominent in the southern provinces due to the expansion of irrigation facilities. The cases of malaria treated in government institutions in the 7 years 1944-50 averaged about 598,800 annually. The case rates in the various provinces, based upon the at- 164 361 164

63:Simmons et al G-5 (1941-1951) 1954
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tendances in the hospitals and the dispensaries in 1950, ranged from 26 to 266 per 1,000 population. They approached, or exceeded, the mean rate of 111 per 1,000 in 6 *liwas*, being 106 in Diyala, 111 in Diwaniya, 155 in Erbil, 158 in Sulaimaniya, 205 in Hilla and 266 in Kerbela. While such statistics provide rough indices of the present prevalence of the disease, they contribute little to our knowledge of the extent of the problem. 164

The northeastern mountain districts and the irrigated zones along the Shatt al Arab and the lower Euphrates are the most highly malarious sections of the country. Differences in the average rate of endemicity, as shown by spleen surveys among children 2 to 10 years of age, are indicated on the following map,[41] in which the principal malarious regions are arbitrarily grouped according to the factors governing the transmission of the disease. Malaria is hyperendemic in the date-growing areas along the Shatt al Arab (I), which are watered by a complex system of tidal irrigation. In Basra, Fao, Al Qurnah and the chief towns, the spleen rates approximated 75 per cent in 1941, but were reduced to about 12 per cent by 1949 as the result of control operations. The rate of infection is relatively low in the marshlands of the southern delta (II), where *Anopheles pulcherrimus* predominates, but foci of greater prevalence exist as far north as Qalat Saleh. In Amarah and other towns, the spleen rates are estimated at about 8 per cent. In the lower Euphrates basin (III), the annual flooding of the river and the extensive system of gravity-flow irrigation from high-level canals create conditions favorable to the breeding of the vector species, *A. stephensi*. The spleen rates usually average 30 to 60 per cent, but in controlled localities, as Hilla, Kerbela, Nasiriyeh and Suq ash Shuyukh, they had declined to around 20 per cent in 1950. In the upper Euphrates valley, north of Ramadi (IV), however, irrigation is limited to small-scale projects employing pumps or more primitive meth- 164 361 [136] [312]

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63:Simmons et al G-5 (1941-1951) 1964
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Malaria in Iraq. Regional Endemicity[41]

[3/2] ods for lifting the water from the deep river channel, and malaria is only mildly endemic. The spleen rates in Hit, Anah, Haditha and such typical towns approxi-

[3/2] mate about 4 per cent. Lift irrigation is also employed in the middle Tigris region (V). The spleen rates are generally low, although scattered foci of endemicity exist where conditions are suitable for the breeding of *A. stephensi*. In Baghdad and other towns the spleen rates are normally about 3 per cent, but epidemics sometimes result when other species invade the agricultural areas from neighboring foci to the north. An outbreak in which *A. sacharovi* was implicated was reported in 1946-47 in the vicinity of Baghdad. A sharp outbreak also occurred in 1947 in a district north of the city, when the infection was transmitted by *A. superpictus*. Malaria is endemic, as well as epidemic, in the gravity-irrigated zones of the lower Diyala basin (VI), but a low level of infection prevails in the districts near the junction of this river with the Tigris. Spleen rates of 20 to 50 per cent are found throughout much of the area, approaching nearer 90 per cent in uncontrolled villages around Baqubeh.

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The disease is endemic along the Tigris, the Khazir, the Great Zab and the Little Zab rivers in northern Iraq, but the surrounding steppelands (VII) are relatively free. The infection was formerly widespread along the eastern edges of this zone. However, a marked reduction in prevalence has been noted within recent years around Erbil and Kirkuk, due probably to the fuller utilization of the mountain streams for irrigation purposes. In 1946, spleen rates of about 38 per cent were recorded in typical riverside communities, as Eski Mosul, Mosul, Kellek and Quwair, but in Kirkuk and other towns distant from the main rivers they averaged only 9 per cent. Since that date, control measures have been carried on in Mosul, and in 1950 the spleen rate was estimated at 5 per cent. The foothill regions along the Iranian border in Kut *liwa* (VIII) and in the northeastern provinces (IX) are highly malarious, or subject to occasional sharp epidemics. *A. superpictus* is the only vector in the southern foci, but *A. superpictus*, *A. sacharovi* and, possibly, *A. claviger* are responsible for the transmission of the infection in the north. The spleen rates in uncontrolled communities in Sulaimaniya *liwa* and in the eastern portions of Mosul, Erbil, Kirkuk and Diyala range from 20 to 100 per cent. In the valleys of the Kurdish mountains along the Iranian and the Turkish frontiers (X), *A. sacharovi* is replaced by *A. maculipennis maculipennis* at the higher elevations. Spleen rates of 25 to 90 per cent are found in different localities.

On the alluvial plains, malaria transmission takes place from March to November, with two peak periods, the more important from May to August and the second in October and November. In the extreme south some transmission continues throughout the year. The season is shorter and more continuous in the northern provinces, and normally extends from May to October, with the maximum infection rates in July and August. Further study is required for an appraisal of the relative prevalence and

seasonal distribution of the different species of malarial parasites. *Plasmodium falciparum* appears to predominate in most localities with a moderate to high rate of endemicity, as well as during epidemics in all parts of the country. *P. vivax* is also widespread. It is often observed in the blood of infected individuals, even in hyperendemic areas, during the nontransmission season, and the local authorities state that it is unusually difficult to eradicate certain strains in the course of treatment. *P. malariae* is reported more or less sporadically. In certain areas in northern Iraq, it is being encountered with increasing frequency, and some evidence exists that it may be found to take the place of *P. vivax* as the principal species concerned with clinical relapses. Among the 2,865 to 4,281 cases of malaria treated annually in the hospitals and the dispensaries of the Iraq Petroleum Company in 1946 through 1950, from 8 to 53 per cent were identified as *P. vivax* infections, from 0.7 to 7 per cent as *P. falciparum* and up to 8 per cent as *P. malariae*. The remainder were diagnosed on a clinical basis. *P. ovale* was reported recently, but the origin of the infection was obscure. Blackwater fever is rare, although cases are sometimes seen in Basra and in the northern highlands.

Malaria control measures have been carried on in limited areas under the auspices of governmental or other agencies. The Department of Endemic Diseases of the Ministry of Health conducts anopheline control and treatment programs in highly endemic areas throughout the country through subordinate units in central, southern and northern Iraq. A rural health and malaria control project was initiated in the hyperendemic Tanjero valley in Sulaimaniya *liwa* in 1952, in co-operation with the World Health Organization.

Rickettsial Infections. Outbreaks of louse-borne typhus recur almost annually, but are seldom extensive, except under abnormal conditions, as during war periods. The infection is frequently introduced by

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THE INFECTION IS FREQUENTLY INTRODUCED BY means of the pilgrimage traffic or tribal migrations from the neighboring territories, and is believed to smolder continuously in the northeastern mountain districts. Cases are usually observed during the winter and the spring months, with the maximum incidence in March and April. Serious outbreaks, with a total of over 1,300 known cases, were reported in 1942-43 in conjunction with epidemics prevailing throughout the entire Middle East. The actual prevalence was probably several times the official estimates. The greatest numbers of cases were noted in Baghdad, and in Basra, Mosul, Diyala and Sulaimaniya *liwas*, along the main routes from Iran. The congestion and the shortage of food, clothing, soaps and other supplies existing in that area as the result of military operations during World War II favored the spread of the infection among the louse-infested populations. About 800 cases of typhus were reported in 1944, but the annual incidence subsequently declined to a low of 72 cases in 1949. No differentiation is made as to type, and the recorded cases include both louse-borne and flea-borne infections. On the basis of laboratory investigations, authorities at the Royal Hospital in Baghdad suggest that many outbreaks in the north, where louse-borne typhus is supposedly endemic, are caused by strains which are serologically intermediate between *Rickettsia prowazeki* and *R. mooseri*.

Murine typhus is endemic, and probably predominates in the rural areas in the absence of a large-scale epidemic. Tick-borne infections are not specifically reported, and are undoubtedly rare. In the event of a typhus outbreak, control measures, including the use of DDT preparations and mass immunization of the inhabitants with antityphus vaccines, are carried on in the affected communities by the government health authorities.

Plague. Epidemics of plague were frequent in the past, particularly in the region around Baghdad, but the disease has been almost completely absent within recent YEARS.

164 484 167 164 164 722 164 [136] 164 744 164

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000 years. The infection is believed to be enzootic among the field rodents in sections of the eastern and the southern provinces, since outbreaks have sometimes coincided with floods which caused the rats to seek shelter in the villages. It has also been introduced on occasion by way of steamer traffic through Basra and the river towns. With the exception of 34 cases, associated with a localized outbreak in the vicinity of Amarah in 1945, no instance of human plague was reported from 1937 through 1952. The 1945 outbreak started in a small village on the edge of the marshes near Amarah, in which 16 cases and 4 deaths were recorded within a period of 20 days. Quarantine measures were enforced by the government health organization and the Allied military authorities. DDT spraying was resisted by the inhabitants, who fled to the marshes, and the most seriously infected village was finally evacuated and burned to the ground.

In Baghdad and Basra, captured rats are often examined for the presence of plague, but rodent control is not attempted in the various cities and towns unless an epidemic is threatened. Plague-infected rats were found in Baghdad up to 1938.

Relapsing Fever. Both louse-borne and tick-borne relapsing fever are sporadic: from 25 to 100 cases are usually reported each year. Small localized outbreaks of louse-borne relapsing fever occur from time to time, primarily in the northern provinces. More extensive outbreaks were recorded in 1945-47, undoubtedly part of the epidemic wave which swept through the eastern Mediterranean countries in 1942-46. According to official statistics, 243 cases were treated in government institutions in 1945, 334 in 1946 and 379 in 1947, in contrast with 52 cases in 1944 and 26 to 33 in 1948-49.

Occasional cases of tick-borne relapsing fever are encountered in northern Iraq. [136] *Ornithodorus tholozani* is regarded as the probable vector.

Leishmaniasis. Cutaneous leishmaniasis

164 369 is endemic in the alluvial plain region, within a radius of about 100 miles around Baghdad, which is one of the major foci in the Middle East. There the infection rates average 20 to 60 per cent, and probably approach 95 per cent in many localities, especially in the older parts of the city. Outside of this traditional focus, the infection is distributed irregularly. Some of the agricultural districts to the south are relatively free from the disease, but in the more compact towns and villages the infection rates are as high as 40 per cent. In Basra and Muntafiq *liwas*, the extent of infection is slight, and even in the towns the prevalence probably does not exceed 3 to 4 per cent. North of Baghdad the disease appears to be confined to isolated foci. It is widespread in the city of Mosul and in the towns of Beled, Samarrah and 'Aqra, but is almost completely absent from the steppe country and from the mountainous areas of Iraqi Kurdistan.

164 758 In the 6-year period 1944-49, the cases of Oriental sore treated annually in government institutions ranged between a minimum of 2,910 in 1948 and a maximum of 10,502 in 1945. All ages are affected, but most of the infections are acquired in childhood, with the greatest susceptibility between 1 and 4 years of age. Multiple lesions are frequent, particularly among individuals living in congested and unhygienic surroundings. Ulcerative sores predominate, but the nodular type is seen in a large percentage of the cases. Secondary tuberculoid lesions, arising in healing ulcers, are also common in children. The largest number of cases is usually observed in August, September and October. *Phlebotomus sergenti* is apparently the only important vector in Iraq, as in Pakistan. Cutaneous infections occur among the dogs and the cats found in the cities, but they are thought to play a minor role in the spread of the human disease.

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164 369 Visceral leishmaniasis, or kala-azar, is suspected of being sporadic in the northern part of the country, although up to 1950

only 1 case, in which the diagnosis was confirmed by laboratory examination, had been recorded. Potential sandfly vectors of kala-azar are apparently absent in the southern and the central provinces, but they may exist in the northern highlands.

Other Infections. Sandfly fever is endemic, and, in the delta region, reaches epidemic proportions every few years. From 842 to 4,688 cases were recorded annually in 1944-49. The sandfly vector, *Phlebotomus papatasii*, is widely distributed. The season of transmission usually extends from May to November, with a peak in June or July. Outbreaks of dengue fever are sporadic in the south.

Cases of elephantiasis of undetermined origin are occasionally encountered, but *Wuchereria bancrofti* is not known to be present. Guinea worm infections are sometimes seen in pilgrims from southern Iran, but no indigenous cases have been recorded.

Nutritional Diseases

Undernutrition, anemia and avitaminosis are prevalent, especially among the wage-earning classes in the cities and the impoverished peasants of the south. Clinical manifestations of vitamin A and vitamin C deficiencies are widespread. In general, serious nutritional diseases tend to be more or less localized in distribution, depending upon the dietary habits and the standards of living of the people. Rickets is common, and from 100 to 2,387 cases were treated annually in the government institutions in 1944-49. Cases of scurvy and of osteomalacia are numerous. Beriberi and pellagra are sporadic, but minor symptoms of riboflavin deficiency are frequently observed. Protein edema is rare. A form of cirrhosis of the liver is encountered in which malnutrition is believed by some authorities to be a contributory factor.

Miscellaneous Conditions

Infectious hepatitis is endemic, and large-scale epidemics are reported occasionally. Encephalitis lethargica is sporadic.

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146 standards of the different urban and rural peoples vary, but undernutrition and avitaminosis are widespread.

144 Malaria, schistosomiasis hematobia, trachoma and tuberculosis are of major public health importance. Enteric fevers, amebic and bacillary dysenteries, hookworm infection, helminthiasis, venereal diseases, rheumatic fever, pneumonia, cutaneous leishmaniasis and various skin and eye diseases are prevalent. Bejel is widely distributed among the nomadic and the seminomadic populations. Epidemics of smallpox and louse-borne typhus occur almost annually. Localized outbreaks of diphtheria and meningococcus meningitis are sporadic. Measles,

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164 whooping cough, sandfly fever, dengue fever and infectious hepatitis are endemic and frequently epidemic. Leprosy, louse-borne and tick-borne relapsing fever and murine typhus are endemic in various parts of the country. Brucellosis, rabies and anthrax are epizootic, and occasional human cases are reported. Scarlet fever, poliomyelitis and leptospirosis are encountered irregularly. Epidemics of cholera were common in the past; the last outbreak was in 1931. A localized outbreak of plague was recorded in 1945, the only cases since 1936 and the first epidemic within recent decades. The presence of kala-azar is questionable, while filariasis is unknown.

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64: Shwadran S-4 (no date) 1955 M1 Middle East
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creased. Of all the Middle Eastern countries, Iraq has all the necessary requisites for a sound and rapid economic development, especially in the agricultural sector. It has a very considerable quantity of land ready for immediate cultivation, so defined by the most conservative standards, and with modern methods very great stretches now defined as uncultivable could be improved and brought into the cultivable class; it has an abundance of water for irrigation as well as for power, and it has at its disposal enormous quantities of cheap fuel both in petroleum and natural gas.

What, then, have been the economic, educational, health and social conditions of the country? As regards the size and growth of the population, even today, more than thirty years since the creation of the Kingdom of Iraq, it would be very difficult to state categorically the percentage increase of the population. The accuracy of the figure advanced by the October 1947 census has been questioned by the International Bank Mission.[7]

Despite substantial strides in public health—an increased number of hospitals, dispensaries and doctors—during the first thirty years of the existence of the Kingdom, the Bank Mission reported in 1951 that the infant mortality rate was very high, "perhaps as much as 250 per 1,000 births," and that there was a very high incidence of such endemic diseases as trachoma, hookworm, bilharzia, malaria and dysentery. Malaria was reported to cause 50,000 deaths every year. In 1948 no less than 6,657,474 visits to medical institutions for treatment were reported, and 1,291,225 cases of infectious diseases were treated. Of these, 603,698 were malaria and 524,740 trachoma.[8] In 1944 the total number of doctors in the country was 528; in 1951 it was reported that there was one doctor to every 7,000 in the population, which would make a total of about 915 doctors, but a large percentage of them were concentrated in Bagdad.[9]

There can be no doubt that educationally the country progressed considerably from the stage in which it was in 1921, but all in all the sum total was not very impressive; the rate of

[7] International Bank, *Iraq Mission Report*, 126.
[8] *Ibid.*, 49.
[9] *Ibid.*, 55; Hashim Al Witry, *Health Services in Iraq* (1944), 8. In 1945 there were, according to a British report, 569 doctors registered in Iraq. Since 308 were in Bagdad, this made approximately one doctor for every 15,400 in the population in the provinces, and one doctor to every 2,700 in Bagdad. Great Britain, Overseas Economic Survey, *Iraq* (1949), 50-51.